

GUIDE FOR CRISIS RELOCATION CONTINGENCY PLANNING

STATE (AND REGIONAL) PLANNING

THIS DOCUMENT SUPERSEDES CPG 2 - 8 - A "PART I: STATE – AND REGIONAL – LEVEL PLANNING" AND CPG 2 - 8 - B "PART II: ALLOCATION AND EMERGENCY PUBLIC INFORMATION" AUGUST 1976.

**DEPARTMENT OF DEFENSE
DEFENSE CIVIL PREPAREDNESS AGENCY**

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GUIDE FOR CRISIS RELOCATION
CONTINGENCY PLANNING

STATE (AND REGIONAL) PLANNING

This document supersedes CPG 2-8-A "Part I: State -- And Regional -- Level Planning" and CPG 2-8-B "Part II: Allocation and Emergency Public Information" August 1976.

DEPARTMENT OF DEFENSE
Defense Civil Preparedness Agency

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Preface

The Guide for Crisis Relocation Contingency Planning was prepared as part of a series of guidelines to assist NCP planners in developing State and local crisis relocation plans.

The Guide represents a third generation of planning guidelines based on the experience gained in applying the predecessor Working Draft Guide in eight pilot projects and the views of the involved planners. This Guide consists of the following four volumes:

- Overview of Nuclear Civil Protection Planning for Crisis Relocation (CPG 2-8-A)
- State (and Regional) Planning (CPG 2-8-B)
- Operations Planning for Risk and Host Areas (CPG 2-8-C)
- Updating Crisis Relocation Plans (CPG 2-8-D)

In addition to the above documents the following volumes previously developed and produced by DCPA supplement the guidelines and should be considered as part of the overall Guide.

CPG-2-8-E Organizational Planning for Crisis Relocation, January 1976

CPG-2-8-F Preparing Crisis Relocation Planning Emergency Public Information, February 1977

Research studies that have contributed to the evolutionary development of the Guide are described in the annotated bibliography, Appendix G, and many have been reproduced in the CPG series for use by NCP planners as reference documents.

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1. INTRODUCTION

The first phase of the crisis relocation planning process is structured to produce a first generation State plan within a relatively short time period (one to three years). This volume incorporates guidelines to assist the NCP planner in developing an initial statewide basic operating plan and supporting annexes.

As a point of reference, Phase I planning, as currently envisioned, includes many of the concepts and approaches outlined in Parts I and II of the previous Working Draft, "Guide for Crisis Relocation Contingency Planning". The guidelines contained in this volume reflect the field test experience gained in eight pilot projects, findings from on-going CRP research studies, and current DCPA policy and program emphasis. Consequently, this improved and updated Guide (consisting of four volumes) supercedes Part I through Part IV of the 1976 five-part Working Draft Guide. It is not intended to invalidate the planning effort already accomplished under the predecessor Guide, but rather to improve and simplify the planning process.

OBJECTIVE AND SCOPE OF PHASE I PLANNING

The primary objective of Phase I is to obtain in all States an initial CRP capability as soon as possible. Completion of Phase I planning is expected earlier in the less urbanized States than in those obviously difficult areas such as the Northeast corridor and California. In these areas, special solutions are being developed through feasibility studies.

It is intended that the initial planning phase for the crisis relocation contingency in a given State or multi-State region be completed before substantial effort is committed to developing the more detailed local operational plans for host and risk areas. This will result in earlier attainment of an initial (albeit relatively low-confidence) relocation capability, should a severe crisis occur before completion of all crisis relocation planning. The first phase planning effort is expected to produce initial State-level plans plus newspaper relocation maps and instructions for risk area population. The more detailed local plans needed to give improve confidence of effective relocation operations will be accomplished in the subsequent planning phase. This phased approach to the CRP planning effort is also necessary because of the lack of survey data currently available to permit planners (on a nationwide basis) to concentrate on development of plans in the host and risk areas.

PLANNING RESOURCES

There are a number of resources available to assist the NCP planning team. In addition to the Guide documents, both general and specialized research related to various aspects of NCP/CRP has been conducted and the resulting research reports are available from either the Region Office or from DCPA Headquarters. The following discussion outlines some of the resources basic to the planning process and describes their usage.

Guide for Crisis Relocation Contingency Planning

The Guide is comprised of four separate documents:

- Overview of Nuclear Civil Protection Planning for Crisis Relocation (CPG-2-8-A)
- State (and Regional) Planning (this volume) (CPG-2-8-B)
- Operations Planning for Risk and Host Areas (CPG-2-8-C)
- Updating Crisis Relocation Plans (CPG-2-8-D)

In addition to the above, the following volumes previously developed and reproduced, supplement the guidelines and should be considered as part of the overall Guide:

CPG-2-8-E Organizational Planning for Crisis Relocation, January 1976

CPG-2-8-F Preparing CRP Emergency Public Information, February 1977

Although each document is bound separately, they have been three-hole punched so that they may be combined in a single three-ring binder for easy accessibility and use. With the exception of the Overview document, each of the remaining volumes addresses a discrete planning phase. The actual planning activities, however, have a strong degree of interface among the within the various phases. The planner should become familiar with the contents of the complete Guide and view it as an entity.

To the extent reasonable, excessive duplication among the volumes has been avoided. The Overview document, especially, should be considered as a part of each successive Guide document. Of primary importance, for example, is the discussion of the use of the Planning Report and of the checklists (Section 4) which is applicable to each planning phase.

Another characteristic of the Guide is the use of appendices to provide supplement technical data on alternative planning approaches that may not be generally applicable. In some cases, the data contained in the appendices have been summarized and/or extracted from referenced research.

Prototype Plans

Prototype/synoptic plans have been developed and are also available from the Region or from the Headquarters. These plans, however, reflect the ultimate structure of the finalized CRP. While it is desirable to review these plans, it should be recognized that they include a level of detail not attainable in the early stages of planning. Rather, they represent the result of several iterations of planning and include the final phase planning for organizational relocation.

The prototypes are most useful in helping the planning team visualize the final plan and in identifying the various planning elements and their structure.

Emergency Public Information

An independent Guide (CPG-2-8-F) has been prepared to assist the planner in developing the various elements of the EPI package. It contains sample graphics, news releases, and a discussion of the use of the media in disseminating information. It covers the full scope of EPI up to the ultimate requirements. Consequently, during the initial phases, the planner should use this Guide in concert with the phased requirements.

Existing Plans and Legal Requirements

A prime requisite resource is existing State and local plans (such as emergency plans, resource management plans, defense highway and transportation plans, etc.). Since it is necessary for the NCP/CRP Basic Plan to be compatible with other State Plan documents, the form of existing plans will exert a critical influence on the structure of the CRP. In addition, review of existing plans may reveal that parts of existing plans can be modified, adapted, or updated to satisfy CRP requirements with much less effort than required to produce a similar document oriented wholly to CRP.

The planner should therefore collect and review all existing plans as well as regulatory and authority legislation which might influence the planning effort.

Other Resources Data

Resource documents from other government agencies (e.g., Department of Agriculture, Census Bureau, etc.) that will be needed or that assist the planner are referenced throughout the Guide. In addition, business and professional associations, unions, and other segments of the private sector have produced a number of documents that will be useful in the planning process. Many of these are referenced, as they have been identified in developing the pilot

projects. It is recognized that many more exist and will be identified through contact with the various private organizations across the county. This is particularly true in developing the support annexes.

PLANNING PHILOSOPHY

The underlying planning philosophy implicit in the overall NCP/CRP process places the emphasis on substance of the plan rather than on form or format. Substance, in this context, may be defined as the ultimate development of solutions which have a high probability of working effectively under crisis relocation conditions.

Realistically, the early version of the State plans and supporting annexes cannot be expected to approach the level of detail (i.e., substance) as the refined, updated plans envisioned as a final product. Consequently, form of the plan will be accorded more attention in the initial phase than in subsequent phases. Once the State CRP has been broadly structured to cover all of the functional (and organizational) CRP elements and the structure has been formulated to be compatible to other State Plans and legal requirements, the preoccupation with form of the plan diminishes considerably. It then becomes a matter of "fleshing" out the basic structure to include the operational detail necessary to attain an implementable, workable plan.

Planning Responsibility

The responsibility for NCP planning is fundamentally twofold. The NCP contract planner is governed by the terms of his contract with the State (or Region). On the other hand, most Regions* contract with the State to provide State and local crisis relocation plans in accordance with established criteria. This means that the NCP planning team must develop CRP plans that are acceptable to State and local jurisdictions while satisfying the criteria as established by the cognizant DCPA Region.

Coordination

Coordination in planning can be viewed from two perspectives: 1) coordination from a participatory standpoint; and 2) coordination among and within the planning activities.

Recognizing the chain of planning responsibility as outlined above, the NCP/CRP planning process nonetheless requires coordination

* Region VIII has contracted with a private contractor to develop the State and local CRPs for that Region.

with, and cooperation from, a variety of public and private agencies and industries. It is therefore incumbent upon the NCP planner to establish contacts and rapport with those organizations likely to be involved. Wherever possible, representatives of such organizations should be invited to participate as members of the planning team or advisory body.

As discussed in the overview document, (CPG 2-8-A) the CRP is a dynamic and iterative process in that the general planning accomplished in the initial phase must be updated when the more detailed local planning is completed. A further iteration in updating both the statistical analysis (allocation of risk area residents to host areas) and the State-level Crisis Relocation Plan will be required when the final planning phase is completed.

A more detailed interface among planning elements in each phase is also required. That is, the planning steps are not purely sequential as presented in the Guide. For example, planning for the Food Support element will require input from the Transportation Support element. In turn, the Food Support requirements will be needed as input to the Transportation Support element. Consequently, the planners dealing with these two elements should maintain a high level of coordination.

Planning Judgement

The Guide is intended to assist NCP planners by suggesting procedures that have been applied and/or appear reasonable and effective in meeting the criteria and schedule as set forth by DCPA. It should be understood from the outset that no single best procedure can be defined for the high variability of circumstances, characteristics, and geographic differences to be encountered. The planner is expected to use professional judgement and local knowledge in determining the techniques and approaches most suited to his task and locality.

The resulting plan and its effectiveness should relocation be directed is the measure of successful planning. Rigid adherence to recommended procedures alone will not guarantee an effective plan.

2. DEFINING THE RISK AREAS

The procedures that may be employed to determine which localities or areas should have plans prepared for relocation during a crisis are outlined below. Procedures are then presented for defining the boundaries of the chosen risk areas in a way that will make it convenient to develop the detailed assignment of risk area residents to host counties and provide boundaries that would seem reasonable to the ordinary resident and could be readily communicated to the public in a crisis situation.

IDENTIFICATION OF RISK AREAS

Essentially, the basis for selection of risk areas for which crisis relocation should be planned has already been accomplished at Federal and State levels. The Defense Civil Preparedness Agency (DCPA) has analyzed the potential hazards from a nuclear attack and has identified those areas considered more likely to experience the direct weapons effects (blast, heat, and initial nuclear radiation). The general approach was to develop "target values" in the following priority: (1) military operating bases; (2) military-supporting industrial, transportation, and logistics facilities; (3) industries and other facilities that contribute significantly to the maintenance of the U.S. economy; and (4) urbanized areas (population concentrations greater than 50,000) not covered in the foregoing. These probable targets were reviewed to eliminate isolated military and industrial facilities considered to be of marginal significance.

The States were given the opportunity to present suggestions for the addition or deletion of areas assumed to be at relatively high risk from direct nuclear effects. As a result of this joint review, some 14 possible targets were added and about 80 were deleted. About 400 possible high-risk areas remained, and are shown in TR-82 (Ref. 1). This is not intended to imply that risk areas cannot be added or deleted as the nature of the threat or other factors change.

Members of the staff of the appropriate DCPA Region will represent the view of the Federal government in considerations leading to selection of the risk areas to be planned for population relocation from among those shown in TR-82. In addition to the State Civil Preparedness staff, the State Adjutant General, where he is not also the State Civil Preparedness Director, and other State officials, as the State CD Director may designate, should

participate in this basic planning decision. The principal Federal view is represented by the Priority Listing to be found in TR-82.

WEAPONS EFFECTS ASSUMPTIONS

Soviet capabilities projected under existing arms limitations agreements were applied to the established target list, assuming all weapons were air-burst with reliability of 0.9 and aiming error (CEP) of one-half nautical mile (see Chapter 1 of the DCPA *Attack Environment Manual* for discussion of these factors). Weapon sizes were assumed for each target or aiming point. The extent of these direct weapons effects are shown by the red "blobs" in TR-82. The outer edges of these boundaries describe those areas assumed to experience blast overpressures of at least 2 psi. Figure 2-1 shows a typical TR-82 risk map for the State of Colorado.

The configuration of most blobs are either circular or consist of overlapping circles from several assumed weapon detonations. In Figure 2-1, the large, more ill-defined blob along the northern boundary in the eastern part of the State represents a counterforce target area comprised of a series of well separated missile emplacements. This type of target is generally less well defined for a number of reasons. Very large weapons have been assigned to these targets, although this might not be the case in an actual attack. Moreover, the direct effects areas are based on air burst conditions, whereas missile fields would almost certainly experience ground-burst attack. Also, there has been no attempt to outline areas of low overpressure within the overall attack area. Hence, the weapons effects blobs on large counterforce targets should be treated as an approximation of the threat.

In addition to the direct effects blobs, TR-82 also shows those areas which have a higher-than-average risk of experiencing heavy fallout.* To develop this threat picture, all weapons were assumed to be ground-burst. Thus, the direct effects blobs and fallout threat counties are "worst-case" estimates. That is, weapons in an actual attack must be either air-burst or ground-burst, and generally, some will be air-burst and some will be ground-burst, so that both direct effects and fallout are overstated for planning purposes in TR-82. The 50 percent probability of experiencing over a 10,000 roentgen four-day dose in the open was used as the definition of high fallout risk.

In addition to the TR-82 weapons effects data there are computer listings available from DCPA that more precisely define both the blast and fallout conditions described above. One of the available printouts describes the blast overpressure and fallout conditions by minor civil divisions. Another printout describes the blast overpressures on a two minute grid base.

* Data in TR-82 is based on the fallout level at the county population centroid. If this point exceeds 10,000 R, the entire county is "color coded" as high fallout risk. Subsequent computer printout data has been provided to NCP planners which displays fallout data based on the population centroid for a Minor Civil Division, thus permitting more refinement in planning.

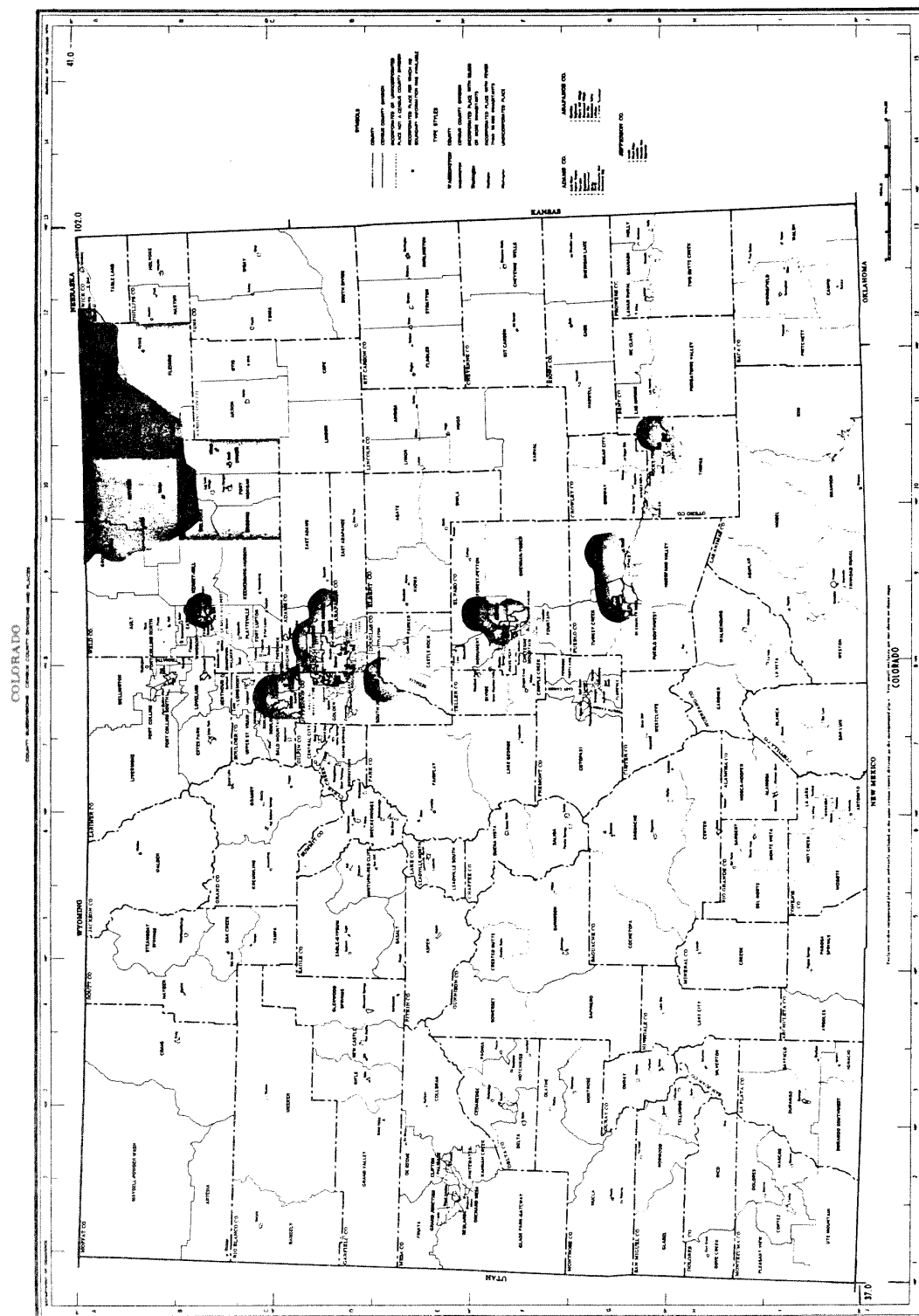


Figure 2-1
TYPICAL STATE RISK AREA MAP

As a general rule, areas that are at fallout risk should not be considered for evacuation. In the first place, the fallout risk designations were based on average winter and summer winds from the ground level to very high in the atmosphere. Actual winds at the time of an attack are likely to vary significantly from the average used in the threat calculations. Therefore, moving the people from a fallout risk county to a neighboring "safe" county may not improve their chances for survival, especially if the host county has less fallout protection than their resident county. Secondly, if an adequate in-place posture is made the planning goal in such fallout risk counties, relocation would be unnecessary and undesirable, particularly if it meant abandoning good fallout protection for less adequate protection at the relocation site. Unless a large capacity of good fallout shelter in mines and caves exist in a county designated at fallout risk, it is reasonable to avoid using it as a reception area for other relocatees.

DEFINING RISK-AREA BOUNDARIES

The outline of the risk area defined by TR-82 is based on nuclear weapons effects and assumed missile accuracies and usually will not be coterminous with political, census, or geographic boundaries. In order to use census population and other resource data, it is desirable to adjust the risk area boundaries to coincide with census tract, municipality, MCD or census county division boundaries wherever possible.

Another factor to be considered in precisely defining the risk area is that the resulting boundaries should be easily recognized by, and communicated to, the risk area population. Significantly, it should look reasonable to the lay public. That is, the defined area should not contain peculiar enclaves or random protusions that may result from following political or census boundaries.

Additionally, judgment must be exercised to avoid the natural tendency to always locate risk area boundaries well outside the 2 psi weapons effects area. This practice will inevitably result in a larger risk population to be relocated than the attack analysis warrants. In those parts of the country where risk areas are widely separated and where abundant hosting resources are available, over-stating the risk area does not have a significant impact, but in many parts of the country the penalties can be quite severe in terms of increased difficulties in moving and hosting relocatees.

The specific definition of the risk area boundaries cannot be made from the TR-82 maps, since they are not of sufficient scale to allow reasonable measurements. The weapons effects data, together with 1970 Census population data was used to produce computer printout tabulations of the risk area population (Ref. 2)*. These printouts identify all CCD or MCD area populations that are within the assumed 2-psi contour. Appendix A describes the derivation of the risk area data.

* All References are listed in Appendix F

In the computer printout, all of the population is assumed to be in the risk area if the population centroid of the MCD or CCD falls within the contour. In addition, the printout includes all of the residents of the "urbanized area" of an SMSA as being within the risk area, whether or not the 2-psi contour includes the entire urbanized area.

While there is a relationship between the hypothesized weapons effects blob and the area containing the population at risk according to the computer printout, there can be, and usually are, substantial differences. One reason for always including the urbanized area in the area at risk is that it is the urbanized area that is so densely populated that major loss of life can result if the area is subjected to nuclear weapons effects. Moreover, it would be difficult to develop a credible plan for relocating only part of a city's population even though this may be suggested by the countour of the blob.

The recommended procedures for making necessary adjustments to risk area boundaries are outlined below. The planner should have the following resource documents: TR-82 (Ref. 1); the printout tabulation of risk area population (Ref. 2); the Bureau of Census publications PC (1)-A, which gives the number of inhabitants for Minor Civil Divisions* (Ref. 3); and PHC (1), which gives the population by census tracts for SMSA's (Ref. 4). A street and highway map of the area will also be helpful.

1. Using the printout tabulation of the risk area population as a guide, outline the provisional risk area on the MCD maps (Ref. 3) or on the census tract map in the rear pocket of the tract book (Ref. 4) if the risk area is entirely within the SMSA.
2. Compare the provisional risk area outlined with the weapons effects blob from TR-82 (Ref. 1).
3. Identify those portions of the risk area boundary that do not correspond to the boundary of a political jurisdiction or a major road or landmark and

* MCD's are Minor Civil Divisions which are defined as either political or administrative subdivisions below the county level as established by State law. They may be townships, towns, magisterial districts, etc. Currently, 28 States have MCD's. Twenty-one States have CCD's (Census County Divisions) instead of MCD's. Their primary function is to provide a statistical entity between the county and city designation. They generally are not a political boundary but reflect a city or principal settlement and its trade or service area.

therefore would be difficult to describe in public information materials.

4. Using the weapons effects area and the urbanized area as rough guides, modify the provisional risk area as necessary to produce a sensible and easily described area to be evacuated.

The product of these steps is a map of the defined risk area.

DETERMINING RISK AREA POPULATION

To determine the number of risk area residents to be relocated to host areas, tabulation of the populations for each MCD or census tract within the defined risk area boundaries should be developed. The source of population figures will be the appropriate 1970 Census publications (Ref. 3 and Ref. 4) for the specific area. If more current population figures are available from the State or local metropolitan planning organization, they should be used. Data on projections of future populations can often be obtained from such sources as local Chambers of Commerce, City or County Planning Commissions, State Planning Agencies, and in special study reports (e.g., transportation and land-use planning) accomplished for specific State agencies.

Care should be exercised in tabulating the population, since the MCD or census tract data may require adjustment and proper interpretation. Using roads or other landmarks to define the risk area may result in only part of a census tract or MCD being included.

If only part of a census tract or MCD is included, it will be necessary to estimate the population of the included part. If the risk area is within the SMSA, the census tract map and tract data is the most valuable guide. If the proposed risk area boundary passes through part of a census tract, an approximate population count can be obtained from the total tract population, the proportion of the tract area included, and the general rule that the population density of a tract will generally be greatest near the central city, decreasing in an outward direction. The 1970 population of small towns and places in the tract, as given in Table 6 (of Ref. 3), may also be of help. If the proposed boundary passes through an MCD in a county outside the SMSA, the data in Table 10 (of Ref. 3) can be used to estimate the included risk population.

Figure 2-2 is a reproduction of a typical urbanized area map of Colorado Springs provided in PC (1)-A. Figure 2-3 shows the risk area boundaries developed by the planning team superimposed on a tract map from PHC (1). In this example, the risk area is wholly within the SMSA; accordingly, only census tracts are involved.

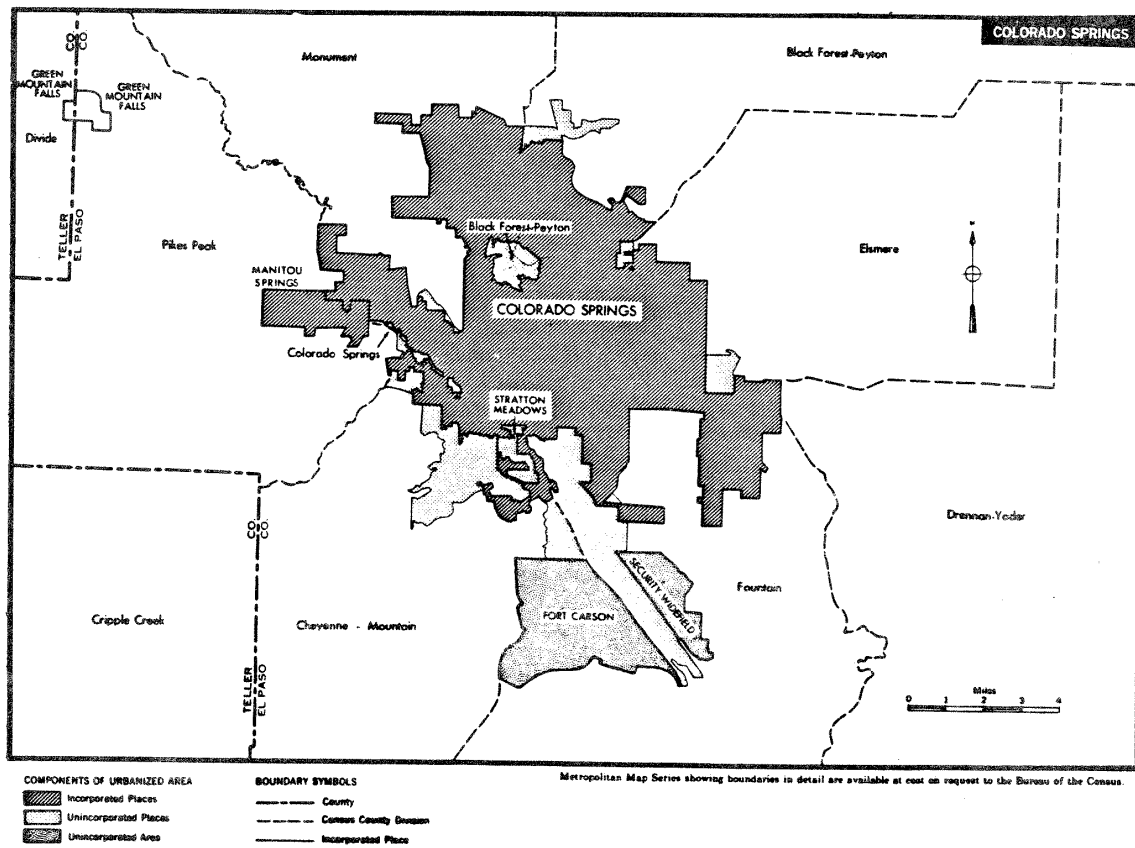


FIGURE 2-2

TYPICAL URBANIZED AREA MAP

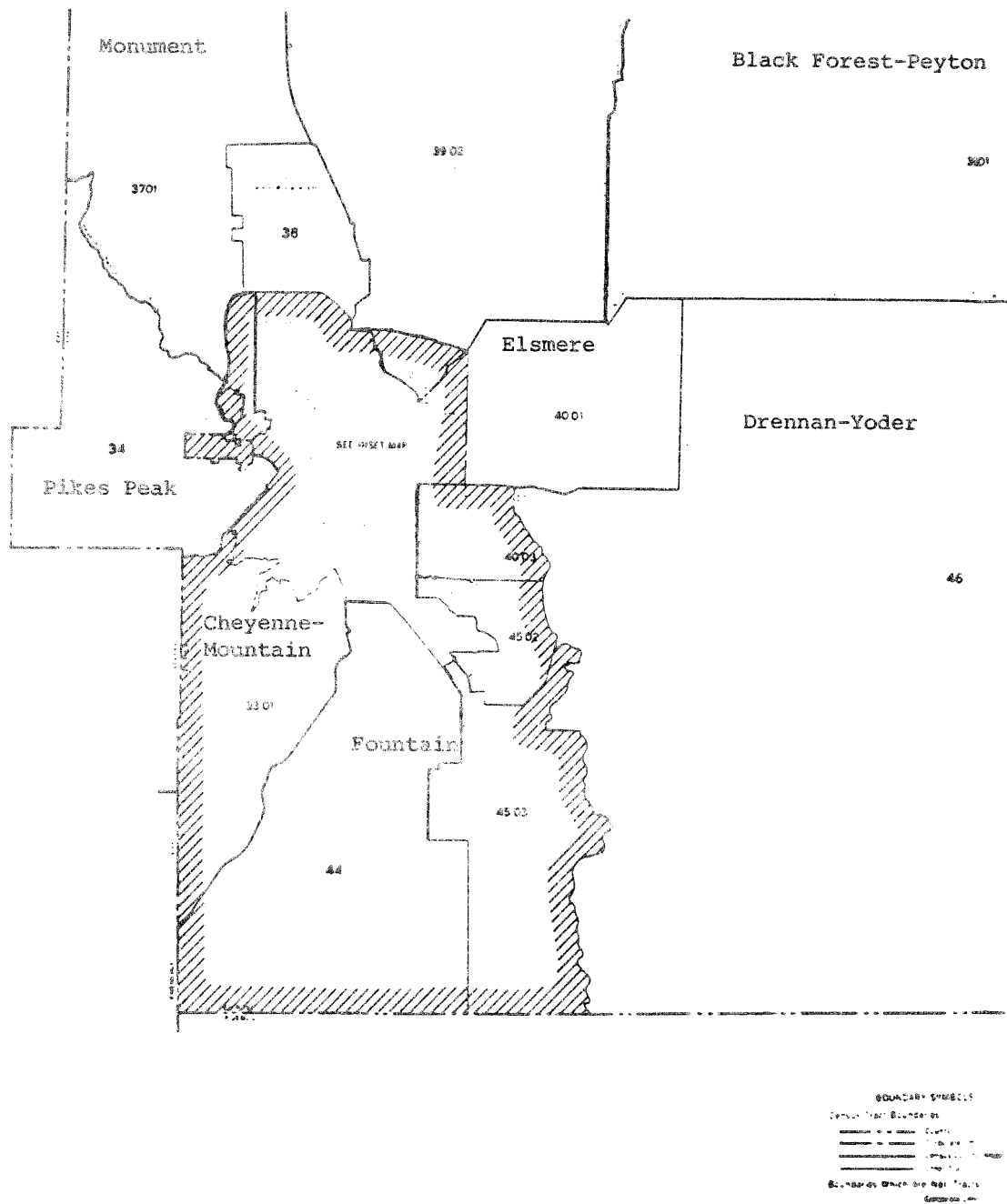


Figure 2-3. Risk Area Boundaries

While some tracts are wholly within the central city, others are wholly within the surrounding county or counties. Many, however, will be "split tracts"; that is, tracts lying partly in the city and partly in the county. Note, for example, in Figure 2-2 that there is a parcel of territory labeled as part of the Black Forest-Peyton County Census Division that is entirely surrounded by Colorado Springs City. The census tracts in this area are split tracts.

The typical tract book is organized to present city tracts first including the city portion of split tracts, the balance of the county tracts including the county portion of split tracts, and finally, the totals for the split tracts. Therefore, if a split tract is wholly within the risk area, it is important to record the total population from the "back of the table" rather than a partial number found earlier in the table. A good routine is to list all the tracts in the risk area and then to enter the "all persons" number for the split tracts first. By filling in all the split tract totals as they occur, they can be ignored when referring to the front of the table to obtain the listing for the tracts wholly within the city. This procedure will prevent inadvertent errors in the use of the tract book.

Figure 2-4 is the completed tabular listing of tract populations and total risk area population for the Colorado Springs risk area. Note that Tract 34 has "(C.S.)" alongside the number. This means that Tract 34 is a split tract of which only the city portion is in the risk area. Therefore, the general procedure in the foregoing paragraph is not followed. Also, Tract 39.02 has "(64%)" by the tract number. This means that only 64 percent of the population of Tract 39.02 is in the risk area. All tract book numbers for this tract will be reduced to this amount. (Figure 2-3 reveals that a part of Tract 37.01 is in the risk area, but this area is unpopulated so the tract does not appear on the list.)

To summarize, a map similar to that in Figure 2-3 and a tabulation similar to that in Figure 2-4 are the essential products of the work described in this section. These products should be prepared for each risk area selected for inclusion in crisis relocation planning as they will provide the base data for the initial allocation process.

(1)	
TRACT NO.	TOTAL POP
1	5941
2	6144
3.01	3684
3.02	2976
4	3117
5	2660
6	4550
7	4163
8	3181
9	2901
10	2956
11.01	1500
11.02	4445
12	3896
13.01	3154
13.02	2315
14	4157
15	3781
16	3927
17	1791
18	2624
19	3817
20	7554
21.01	3870
21.02	5981
22	4014
23	1593
24	1949
25	5258
26	1940
27	4380
28	5282
29	7494
30	5146
31	1329
32	1087
33.01	610
33.02	1797
34(C.S.)	46
35	2854
36	1424
37.02	926
39.02(64%)	4938
40.02	11615
40.03	9688
40.04	8715
41	5827
42	2832
43	3712
44	19399
45.01	4124
45.02	5111
45.03	4530
RISK AREA	217,707

FIGURE 2-4

COLORADO SPRINGS RISK AREA POPULATION BY TRACT

3. POPULATION ALLOCATION AND ASSIGNMENT

The process of *allocating* host areas to risk areas and the subsequent *assignment* of specific segments of the risk area population to locations within the designated hosting area can, in some cases, be highly iterative. Preliminary allocations must be refined and adjusted in accordance with local characteristics, and statewide and regional factors. As the successive planning steps progress to risk area assignments, further adjustments may be required to attain a more reasonable and equitable allocation.

Precision at this stage of planning is not an overriding consideration in view of the uncertainties in the basic planning assumptions. The percentage of population that will choose not to relocate or will go to hosting locations other than those to which they are assigned is unknown. This, coupled with the use of census data that may be many years out of date, suggests that accuracies on the order of ± 10 to 20 percent are probably all that can be achieved. This does not mean, however, that the planner can be careless in developing his data. It merely means that it is often appropriate to use aggregated data at the county or MCD level, rather than census tract level. Similarly, it is appropriate in Phase I planning to estimate population distribution or individual demographic characteristics assuming uniform densities and homogenous distributions. It will be necessary at each stage in the planning work to carefully document assumptions used and their rationale in the Planning Reports.

The following guidelines introduce the basic allocation process and the analytical factors to be considered in developing risk area population assignments. These recommended procedures are based on the consensus of the field test results from the pilot projects.

INITIAL ALLOCATION

The purpose of this step is to develop a preliminary allocation of host counties to designated risk areas within the State. This will involve reviewing the general ADAGIO allocations for reasonableness, examining alternative allocation schemes, and testing the sensitivity of such allocations in terms of accessibility; host area housing capacity and shelter potential; balance of hosting rations and travel distances; etc.

Preliminary Allocation of Hosting Areas

Having selected the risk areas for which crisis relocation plans will be developed, having defined the boundaries of these risk areas, and having arrived at a reasonably accurate (± 5 to 10 percent) risk area population figure, the next major step is to determine where the risk area residents will be hosted. A major output of the State-level planning is the determination of which counties in the State should be surveyed for housing, shelter, and other resources needed to host the relocated population.

In most States, counties are the most useful jurisdictional level to use at this stage of planning. Most census data much State-level information is organized by counties. Later detailed host planning will be based on survey information that can be localized to cities and towns within the counties.

There are a number of critical factors that must be considered in selecting the hosting areas and assigning numbers of relocatees to each. Housing the relocatees is one of the most pervasive considerations. Current DCPA policy is to house and feed the relocated population in congregate care facilities rather than in private, occupied residences. However, it should be recognized that there is evidence to suggest that many host area residents will volunteer to house relocatees during a crisis.

Availability of adequate water and sanitary facilities may be important. Planning for the provision of food, fuel, and other essential commodities to the relocated population is a crucial State-level requirement that is discussed later. These plans are based on the preliminary hosting assignments resulting from the procedures suggested below.

Establishing Hosting Ratio

The first step is to estimate the hosting ratio achievable within the State. In the areas where risk area population cannot be hosted within the confines of the State, a multi-state analysis must be undertaken. The DCPA Region staff will participate with the State NCP planners and State Emergency Preparedness staff in conducting this analysis.

Essentially, the hosting ratio is obtained by dividing the total number of relocatees by the net number of host area residents. These numbers can be derived by the simple calculation outlined below.

1. Calculate the total relocatable population (the sum of population within all designated risk areas in the State for which crisis relocation is planned).

2. Subtract the total relocatable population from total State population to obtain the number of non-relocating population.
3. From the non-relocating population, subtract the number of residents in blast^{*} and fallout risk areas not planned for relocation. This will yield the net host area population.
4. Divide the total relocatees (from Number 1 above) by the host area population (from Number 3 above) to obtain the hosting ratio.

It is recognized that not all people in the risk area will be relocatable. This group would include the seriously ill, members of the armed forces, and possibly military reserves and National Guard, as well as those who simply refuse to leave voluntarily. On the other hand, host area population may be increased by visitors, transients, or people from risk areas not planned for relocation. Consequently, precise planning is simply not possible. At this stage, it is sufficient to assume that all risk area residents must be cared for in low-risk hosting areas.

Host area surveys conducted to date suggest that generally, there are sufficient facilities to host two to three relocatees for each host county resident. If the ratio is less than 2 or 3:1, some selectivity can then be exercised in use of potential hosting areas, or the general reception and care load can be reduced. A requirement that is above 3:1 does not imply that crisis relocation is not feasible. It does mean, however, that all hosting areas and all resources must be carefully utilized in developing a credible relocation plan. It may mean that regional planning must be substituted for State-by-State planning in order to balance use of hosting capacity throughout a multi-state area.

Some high density areas, such as California and the Northeast corridor, have special problems which require special solutions. The procedures suggested are probably not applicable to such special cases, but should be readily adaptable to the situations in most States.

Using ADAGIO Allocations

The ADAGIO program is a computerized procedure for allocation of host counties to risk areas. Two ADAGIO printouts have been prepared for use in the allocation process: one is State-constrained, the other is not. Although the usefulness of the ADAGIO allocation is limited by the parameters used, it nonetheless provides a reasonable starting point. The following discussion summarizes the

^{*} This reflects the unusual situation of not planning to evacuate residents of certain high risk areas that may be subjected to the direct weapons effects.

ADAGIO program and defines the major factors to be considered in adapting and refining the initial ADAGIO allocations.

ADAGIO Assumptions

Both of the ADAGIO printouts assume the relocation of all residents of the MCD's whose centroids are within a direct effects blob. Thus, if only certain of these areas were selected for crisis relocation planning, the number of relocatees will vary.

Full relocation of the blast-risk areas is assumed. The population in county areas of high fallout risk are not considered for relocation, nor are these areas used for hosting. Using the airline distances from the centroids of the risk areas to the centroids of the various host counties, the computer program allocates relocatees so as to minimize the average travel distance.

The difference between the two printouts lies in the location of the host areas. In the first, risk areas and host areas within the State boundaries are considered. In the second, State lines are ignored and the allocation considers the competition of hosting capacity among risk areas over a regional or even broader basis. Thus, relocatees from one State are often assigned to host counties in another State if this results in a lesser average travel distance for the region. A hosting ratio of three is assumed in these computations. If a State cannot host all relocatees at this maximum ratio, this is noted on the first printout.

Since the host county allocations are based on airline distance and a capacity that is three times the resident population, the resulting allocation must be evaluated in terms of accessibility, hosting capacity, shelter potential, reasonableness of the assignment, and other pertinent factors. This evaluation will usually result in a number of changes to computer version of the allocation. Since the allocations were developed from an analysis of competing demands from the various risk areas, if all counties in the State or nearby States are allocated as host areas, a change in the allocation of one county may require a change in one or more of the other host counties. Obviously, it is important to establish host area allocations that will not require major change thereafter, although some modification and adjustment may be expected as a result of later detailed planning steps.

Reasonableness

Because the computer allocation attempts to minimize average travel distance, the host counties allocated to a given risk area may not be contiguous and may be separated into groups. In some

cases, this may require the relocatees to pass through other risk areas or travel by routes that would obviously interfere with the movement from another risk area.

To arrive at a reasonable allocation, a number of alternative trade-offs should be considered. The populations of various counties must be considered in making such trades so that the overall hosting ratio can be maintained within reasonable limits. In making these preliminary adjustments, the nature of the available road and rail networks and the topography of the land must be considered. These considerations will require more formal review later in the process.

One additional point should be made. It is convenient from the point of view of mapping to allocate host counties to a particular risk area; however, this can result in under-utilized host capacity, large variations in travel distances, and discontinuities. Since receiving relocatees from more than one risk area has very little impact on the reception and care arrangements in a host county, there should be no reluctance to share hosting capacity among risk areas where it will reduce complications in the movement or balance relative travel distances.

Access Evaluation

This evaluation should involve a cursory examination to determine if it is physically possible to travel from the risk area to all inhabited areas of the designated host counties. The computer, as previously noted, works from airline miles between the centers of areas. Any host county that does not have reasonable access (at least a two-lane paved all-weather highway) should probably be eliminated from further consideration. If the allocated host area is not contiguous, it should be determined if the highway access to the isolated portion will present any major movement conflicts with relocations from other nearby risk areas.

A simple technique for this analysis consists of outlining the allocated host counties on a State road map and tracing the various access routes to and through the area. Detailed calculations of route capacities are not necessary. The purpose is merely to exercise judgment in identifying obvious problems before detailed planning begins.

Housing Capacity

To this point, the resident population of a host county has been taken as the measure of the probable resources available to

provide for risk area residents relocated to the county. In actuality, some counties may have hosting capacity considerably in excess of the average, whereas others may be quite deficient.

Host area surveys to identify congregate care facilities are underway, but are not expected to be complete until the Phase II time period. Where host area survey data is not available, a technique for estimating congregate care space has been developed based upon analysis of a sample of completed surveys. This technique, which is described in Appendix B, should provide an estimate of the number of congregate care spaces that is within $\pm 25\%$ of the actual number.

Previous surveys indicate that congregate care spaces, allowing 40 square feet of usable space per person, averaged about four spaces per host county resident. (As will be seen later, not all of these spaces may be available or usable.) The proportion varies widely, however, even among neighboring counties, from a low of less than two in some counties to over eight in others. Figure 3-1 shows the overall results for 26 counties surveyed in various parts of the country. Note that while many counties are quite close to the least square line, some are markedly above or below the norm of 3.8 per host county resident.

Table 3-1 lists the ten use categories that contributed most to congregate care space in previous surveys. For example, counties containing major colleges or universities are apt to score above average as college facilities and dormitories are among the top ten. College towns may also have more motels and stores than other non-metropolitan towns and cities. In addition, counties with resort areas or major tourist attractions may be above average in hotels, motels, condominiums, and apartments for rent, as well as many seasonal dwellings not counted in the survey. "Mill towns" would tend to be above average if factory buildings and warehouse could be converted in whole or in part to housing of relocatees.

It should be noted that not all congregate care space located in the surveys is readily usable. The survey includes space in retail stores, industrial facilities, police and fire stations, utilities, and other structures that may not be suitable or available. Although the readily usable space is likely to vary from county to county, it appears that perhaps two-thirds of the total space can be used for housing relocatees. On this basis, an average of three congregate care spaces per host resident is suggested as a planning guide.

The simplest procedure is to assume that the capacity to house relocatees is three times the host population in every county available as a reception area. Adjustments can be made after the host area surveys have been completed. If the hosting ratio is high or if some counties have already been limited by access,

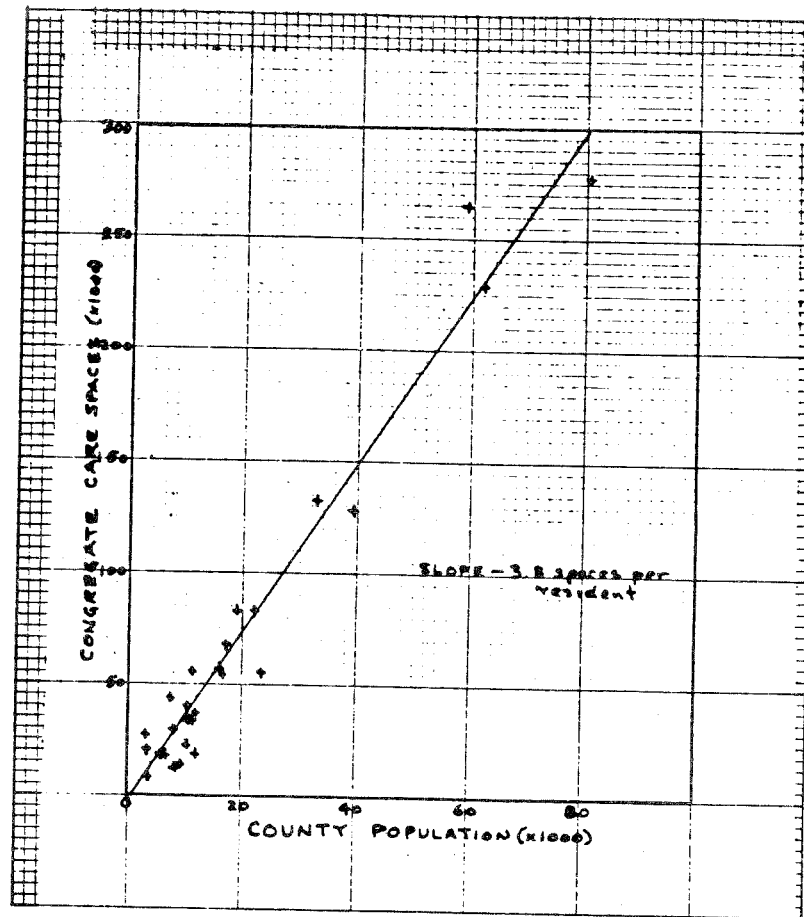


Figure 3-1 RELATIONSHIP OF CONGREGATE-CARE SPACES TO RESIDENT POPULATION

Table 3-1 Top Ten Use Classes Contributing to Congregate-Care Spaces Nationwide

<u>Use of Structure</u>	<u>Percent of All Spaces</u>
Stores Other Than Food Stores	13.6
Factories and Manufacturing Plants	10.3
Junior High, High and Prep Schools	8.7
Churches and Synagogues	6.5
Warehouses	5.9
Elementary Schools	5.7
Colleges and Universities	3.9
Other Commercial Buildings	3.7
Hotels, Motels, and Apartments	2.7
Dormitories and Barracks	2.2
Total Percent of Spaces	63.2

water, or sanitary considerations, State agencies concerned with educational facilities, resorts and tourism, and manufacturing should be consulted to identify those host counties and towns that have excellent housing potential. Judgments can probably be made to raise the potential congregate care of some of these to above average. On the other hand, poor or wholly rural areas can be identified as likely to have below average housing capacity for congregate care.

While it would serve no useful purpose at this stage to seek more precise information, some States with high hosting ratios may wish to conduct a more complete analysis of housing potential. Appendix C presents some additional sources for identifying facilities not considered in the brief analysis described above.

Although the domestic water supply of host areas has not proved to be a problem in the pilot projects, water is a critical resource which should be considered. The State Department of Water Resources (or equivalent) should be contacted to determine if a potential problem would exist under crisis relocation conditions. If there is a chronic shortage or limited supply, it may be prudent to place a limit on the number of relocatees assigned to that area.

Another matter of concern in the hosting of relocatees is the additional load placed on sanitation facilities such as sewage treatment plants. In rural areas where septic tanks or cesspools are the chief means of human waste disposal, advice should be sought from the State Department of Public Health or its equivalent on conditions that could result in pollution of water supplies under the anticipated hosting ratios. If emergency actions during the relocation period cannot be employed to prevent such public health problems, it may be necessary to place a limit on the number of relocatees assigned to these problem areas.

Shelter Evaluation

A final consideration in host county allocations is the preliminary review of available fallout shelter for both relocatees and host county residents. As discussed above, the host area surveys will not be completed in time for this phase. The data from the existing NSS inventory gives an incomplete and discouraging picture of the shelter situation in host counties. The main reason for this is that the major shelter surveys of the early 1960's did not extend far beyond the outskirts of the major cities.

An analysis of the results to date of the Host Area Surveys suggests that the number of Category 1 (PF 20 or better) spaces found was about double that previously identified in the NSS inventory.

Even then, only a small proportion of facilities containing congregate care space were found to contain existing fallout shelter protection. For example, only 11 percent of the surveyed facilities in the hosting areas contained existing shelter that could be added to the NSS file. Nonetheless, the total amount of space found was often more than sufficient for the resident population of the host counties although insufficient for the relocated population.

Of more significance is that the Host Area Survey includes a determination as to whether the remaining facilities can be upgraded to at least PF 20, and generally to PF 40, by means of heaping earth against exterior walls and on lower floors or roofs to increase shielding. DCPA research engineers currently believe that virtually any building is "upgradable" and with less effort than constructing expedient shelters. Since shelter space is commonly measured in terms of 10 square feet per person and congregate care space is based on 40 square feet per person, upgrading of basements of first floors of most buildings would produce the necessary protection. In general, past surveys indicate that existing and upgradable shelter space will approximately triple the congregate care space found.

The proposed use of upgradable congregate care facilities for fallout shelter to meet the deficit, if any, would entail upgrading at the time of relocation. An alternate source of fallout shelter in the northern half of the country is residential basements, which are not covered in the Host Area Survey. A Home Basement Survey has been conducted in States with a substantial proportion of residences with basements. For preliminary planning purposes to determine the shelter available to host area residents*, the data shown in Figure 3-2 can be used. About 7-9 percent of residential basements will have PF 40 in one or more corners; the remainder can generally be upgraded to PF 40 in a manner similar to the belowground congregate care space.

Since the upgrading of existing buildings, outfitting of mines, caves, and tunnels, and digging trench-type expedient shelters can all provide the necessary fallout protection, the current known shelter capacities are rarely, if ever, a justification for modifying the allocation to host counties. There are, of course, exceptions. First, substantial quantities of underground mine or cave space may be cause to consider increasing the number of people relocated near these facilities. Second, if planning flexibility exists, areas might be avoided as hosting locations where rock or other soil conditions inhibit the upgrading of structures or the digging of expedient shelters. Finally, the dimensions of the fallout threat, particularly downwind of hard counterforce targets, should be considered. Counties at high fallout risk generally will not be used as hosting areas.

* Planners should not consider use of home basements for evacuees other than on a voluntarily shared basis.

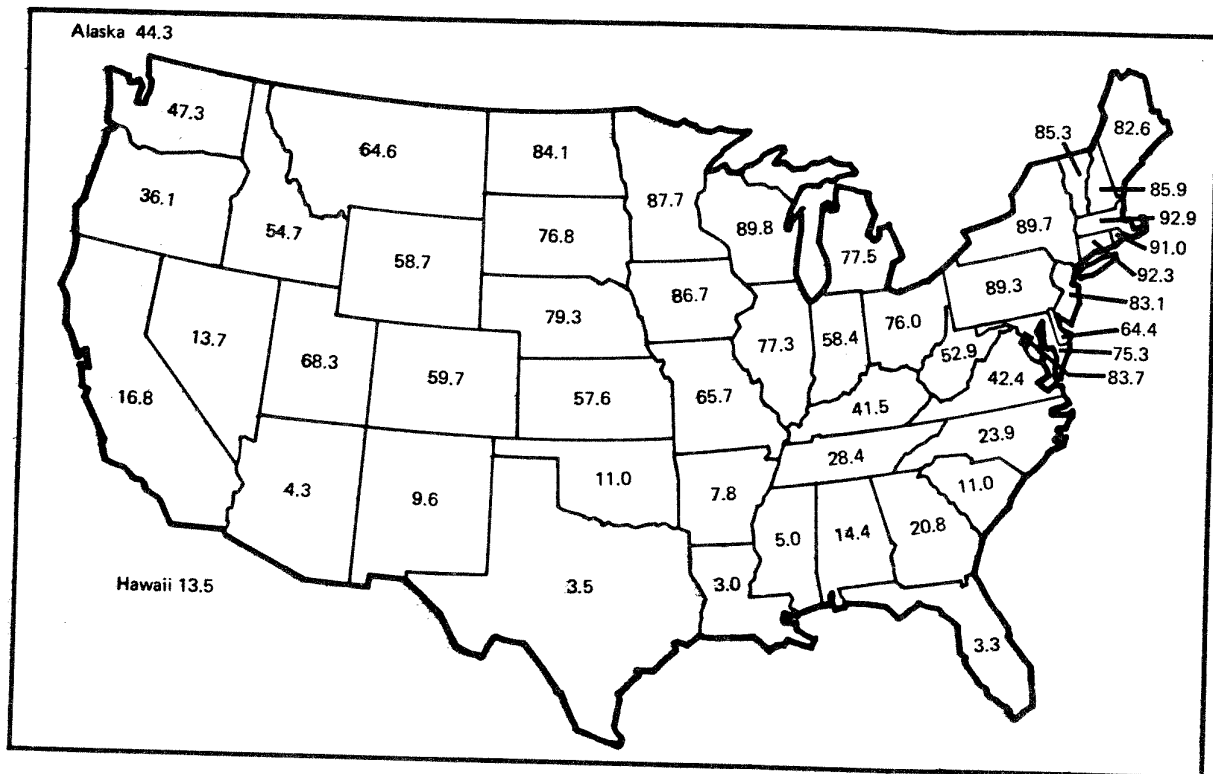


Figure 3-2 PERCENTAGE OF HOMES WITH BASEMENTS

Adjusting Host Area Allocations

The weighing of the various factors discussed above and the modifications of the ADAGIO computer allocation on the basis of these evaluations is, to a great extent, judgemental. Unless access is very difficult, housing capacity should be given the most weight. In a few cases, housing capacity may be overridden by limitations on water availability or sanitary capacities. Sheltering capability should be considered only where it is clearly limiting.

It is recommended that a table and a map be prepared of the entire potential hosting area under consideration. The table should list each county or part of the county (MCD) eligible for use in the hosting of relocatees, its resident population, and the maximum number of relocatees that could be assigned to each. This number would take into consideration the various evaluation factors discussed above. Hopefully, the total of this column will exceed the total number of risk area residents to be relocated. Allocations can then be made within the maximum capacity indicated, beginning with the largest of the risk areas under consideration.

In complex situations, the ADAGIO solution may be useful only as a guide. Hand allocation by the planning team will usually be required. It may be necessary to prepare more than one alternate allocation for consideration by the State Civil Defenses Director. Each iteration should be included as part of the Planning Report.

The selected allocation should be documented in tabular and map form for use in developing the State Crisis Relocation Plan. Three items of data should be provided for each host area (county or MCD): the resident population; the number of relocatees allocated; and the risk areas from which the relocatees are allocated.

ASSIGNMENT OF RISK AREA POPULATION

There are a number of techniques that may be used in assigning risk area population to designated hosting locations. These range from a simple straightforward assignment scheme to a detailed tract-by-tract analysis and assignment. The most simple approach is to divide the city into geographical sections and assign each sector to specific host counties. In this case, the whole risk area population is treated as a homogenous group. A major requirement, regardless of techniques used, is to provide for the relocation of key workers and dependents to nearby parts of the host areas so that commuting to the risk area for the performance of essential activities would be feasible. Another alternative would be to delete active-duty military personnel from the civilian population to be relocated.

Progressively segregating various segments of the population for specific assignments will yield several more complex alternatives including assignment by organization.

There are advantages and disadvantages associated with each concept. Moreover, within each concept, there may be several alternative techniques that can be applied. The characteristics of the risk and host areas will dictate the approach most appropriate to the area. Several desk-top analyses of alternatives may be required before the "best" approach for a particular area can be selected.

The following discussion stresses those approaches that are generally applicable, can be accomplished within the Phase I time frame, and will provide an acceptable framework for the detailed operational planning in Phase II.

The use of tract-by-tract analysis at this stage of planning, as was described in the earlier version of this guidance, has caused concern among NCP planners. Many of the planning teams have found this level of detail to be unnecessary to achieve the objectives of an initial CRP capability. Since precision is not necessary, a more general approach is recommended. As a rule, population data should be at the most aggregated level possible, and characteristics (e.g., household size, group quarters residents, etc.) should be considered homogenous.

This is not meant to suggest that the work already accomplished under the previous, more detailed guidelines is no longer valid. Areas with special problems may determine that the tract-by-tract analysis of population groups is a more effective approach.

The recommended approach to initial assignment consists of: (1) identifying essential industries and key workers; (2) assuming that these key workers and their dependents are uniformly distributed; and (3) assigning the balance of the risk area population as a homogenous group. Some of the factors and exceptions to be considered are discussed below:

Identifying Essential Industries/Services

Although many risk area activities will be abandoned when the population is relocated, some vital facilities and activities will be continued for a number of reasons, such as:

- Some minimum level of police and fire protection and other public services must be provided to secure the largely vacated risk area

- Some institutionalized persons are likely to remain in the risk area for practical reasons and thus some employees of these institutions must be available to care for them
- Transportation personnel will be needed either to help critical workers commute from the nearby host area or to deliver food, fuel, pharmaceuticals, and other consumer essentials to the relocated population and their hosts.
- It may be necessary to maintain production in certain defense-related industries
- Some utility plants and manufacturing processes cannot be readily shut down without either damage or substantial costs and delays to start up, should the crisis be resolved
- Selected activities such as fuel, food, and pharmaceutical production, processing and distribution will have to remain in operation to provide essential goods to support the relocated population.

The problem of predicting how many key risk area employees and their dependents should be relocated in host areas sufficiently nearby to permit commuting to the risk area is difficult, especially in the early stages of crisis relocation planning.

Later stages of detailed relocation planning will identify specific government agencies or parts of these agencies and specific industrial and business organizations that would or might be required to operate in the risk area during relocation. What is needed in the initial allocation stage is an approximation of the numbers of employees and dependents that should be relocated in the close-in host area. Appendix D provides guidelines that may be applied in determining risk area services and industries that should potentially be kept in operation during a crisis relocation situation.

Early pilot projects assumed that key workers and their dependents would comprise 20 percent of the risk area population. This approximation was derived after consultation with local government officials and the guidance provided to DCPA by the Department of Commerce. In later pilot projects, a more intensive procedure was used to determine "exact" numbers. This analysis was based on census tract data which permitted the workers and their dependents to be located by census tract.

For the purpose of the desk-top analysis applicable to this phase of planning, it appears that in most cases, the use of a 20 percent planning factor is acceptable. Until the detailed host/risk area operational planning (Phase II) provides more precise information derived from local agencies and industries, even the most rigorous analysis of census data cannot yield the quality of data commensurate with the effort expended. For example, it has been estimated that 12 percent of the work force changes jobs each year and 12 percent of the total population changes places of residence; consequently, using 1970 census data to identify the tract location of key workers is of marginal value.

By using a percentage planning factor for determining the number of key workers and dependents to be relocated nearby can save significant planning time and will provide ample flexibility for later adjustments.

Other Population Categories

Other segments of the risk area population that may subsequently affect the initial assignment process include military personnel, government employees, institutionalized groups, and residents without private transportation. It is suggested that in most cases, these groups need not be quantified in exact numbers for the desk-top analysis of assignment alternatives. This date, however, will typically be required and compiled during Phase II.

Military Personnel

Active-duty military personnel, on the average, constitute less than one percent of the population of urbanized areas of the United States. Since this is not a significant number, the existence of the military and their dependents can be ignored in most risk area assignments. In some cases, however, military personnel and their dependents constitute a substantial portion of the risk area population. In these cases, it may be desirable to determine if existing military plans cover these personnel and/or their dependents.

Table 3-2 lists various urbanized areas according to the percent of the population made up of military personnel and their dependents. Risk areas listed may wish to consider planning for military dependents as a separate population group. A technique for this more detailed planning is contained in Appendix I.

Table 3-2

ACTIVE-DUTY MILITARY PERSONNEL IN POPULATION
OF URBANIZED AREA

Category 1:	Over 25 percent of the total population is military (majority of population consists of military dependents)		
	Fayetteville, NC Lawton, OK		
Category 2:	Between 10 and 25 percent military (one-third or more of population may be military and dependents)		
	Biloxi-Gulfport, MS Colorado Springs, CO Columbus, GA Norfolk-Portsmouth, VA Petersburg-Colonial Heights, VA Seaside-Monterey, CA Tacoma, WA Wichita Falls, TX		
Category 3:	Between 3 and 10 percent military (perhaps 10 to 30 percent of population may be military and dependents)		
	Abilene, TX	Jacksonville, FL	
	Albany, GA	Newport News-Hampton, VA	
	Charleston, SC	Pensacola, FL	
	Columbia, SC	San Angelo, TX	
	El Paso, TX	San Antonio, TX	
	Great Falls, MT	San Diego, CA	
	Honolulu, HI	Savannah, GA	
	Huntsville, AL	Topeka, KS	
Category 4:	Between 1.5 and 3 percent military (perhaps 5 to 10 percent of population may be military and dependents)		
	Albuquerque, NM	Omaha, NE	Sherman/Denison, TX
	Augusta, GA	Orlando, FL	Shreveport, LA
	Austin, TX	Oxnard/Ventura/ Oaks, CA	Tampa, FL
	Corpus Christi, TX	Sacramento, CA	Tucson, AZ
	Laredo, TX	San Bernardino/ Riverside, CA	Utica-Rome, NY
	Las Vegas, NV		Washington, DC
	Montgomery, AL		Wichita, KS

Government Employees

Government employees with emergency duties and responsibilities in the risk area should be considered "key workers" and relocated with their dependents in nearby host areas. The 20 percent planning factor to be used for key workers (as described earlier) includes these employees.

Most other government employees may be regarded as potentially available for emergency duties to augment the organizational resources of the host area. At this stage, it may be assumed that these employees will be uniformly distributed in the host area as they are likely to be in the risk area. It does not appear necessary to make specific host area assignments for this segment of the population unless and until it is found to be required for host area organization/support purposes.

Institutionalized Groups

Other risk area residents that will eventually require special handling are institutionalized persons (other than the military). These people, according to the Census, reside in group quarters rather than households. These institutions are both public and private and include hospitals and nursing homes, orphanages, homes for the elderly and other special care institutions, colleges, universities and boarding schools, and correctional facilities. The residents are generally dependent elements of the population and often require special care and custody.

Again, since census data suggests that this group constitutes less than one percent of the population, it is not necessary to make specific assignments at this time. Specific planning for these groups will be accomplished when the detailed planning is undertaken for each risk area.

Assignment Techniques

The overriding consideration in relocating risk area population are the modes of transportation and the existing transportation facilities. That is, the assignment alternatives will be highly influenced by the configuration and capacity of the highway network. Another significant consideration is the need to develop a movement plan that can be easily transmitted to, and understood by, virtually all the resident population.*

* A more detailed discussion of Emergency Public Information requirements is given in Section 12.

Assuming that the initial allocation of host areas to a specific risk area has broadly considered accessibility in terms of the availability, capability, and utilization of area transportation resources, a more detailed evaluation will usually be required for the assignment process. As the population size of the risk area increases, the problems of analyzing transportation requirements and resources will increase in complexity and difficulty.

The more complex the problem, the greater the need for the planning team to analyze the various aspects of movement strategies and to develop a series of alternative assignments. These iterative assignments will often be necessary and judgments must be continually applied, especially where either transportation requirements overtax the capacity or where the lack of highway facilities limit direct access to hosting areas.

The following discussion addresses the procedures that can be applied to risk areas with relatively few problems. Progressively more detailed analyses that may be needed to supplement these procedures in planning for the more densely populated urbanized risk areas are also presented. The planning team should review all such procedures and follow those that are closely aligned with the particular needs of the area being studied.

Assignment Procedures for Typical Risk Areas

A number of risk areas requiring crisis relocation planning have relatively small populations (50,000 to 100,000). Of these smaller urbanized areas, many will have ample, or at least adequate, hosting capacity. For these areas, the assignment process can be relatively straightforward; the complexity factor would be dependent on the available highway network. This assumes that these risk areas are not competing with larger risk areas for highways and available hosting space.

In States with large as well as small urbanized risk areas, it is generally advisable to plan for the larger areas first since these areas may require adjustments to the host area allocations to avoid high hosting ratios, long travel distances, and/or inordinate movement times. These adjustments may affect the hosting allocations for the smaller areas. Therefore, by conducting the assignment analysis for the larger areas first, any necessary adjustments involving smaller risk areas will be minimized.

Initial Traffic Assignments

The first step in assigning population of risk areas is to designate on a map the access routes from the risk area to be designated host locations. List the major travel corridors by highway

number. From the State Highway Department, obtain the number of traffic lanes for each highway segment and note them on map. These data will be needed to determine the number of vehicles that can be accommodated on each route within the relocation time period. (The average vehicle occupancy for the involved area can be estimated using the average persons per dwelling unit figure provided in Bu Census publication HC (1), Detailed Housing Characteristics.) (Ref. 5)

Next, assign traffic to each of these routes by allocating each host county to the nearest major highway leading from the risk area. The number of relocatees that are initially considered for assignment to each host county is listed on the computer printout (Ref. 2) supplied by DCPA. These populations are then divided by the estimated average vehicle occupancy to derive the number of vehicles to be accommodated on each route.

If the host area is symmetrical around the risk area and the distances traveled are short, only a single traffic assignment may be necessary. However, if the host area is asymmetrical, as shown in Figure 3-3, or the road capacities vary widely between routes, the initial traffic assignment may result in widely differing levels of vehicles per route. This means that lightly loaded routes would be available for movement many hours before the more heavily loaded routes. Such uneven loading will influence relocatees to travel on the most available route (e.g., the route with the least congestion) which will result in uneven loading of the host area. To mitigate this uneven loading, consideration should be given to reassigning the host counties between movement corridors.

The capacity of the evacuation route will vary by type of road. Typically, residential streets have capacities as low as 500 to 700 vehicles per hour per lane, while multilane freeways occasionally exceed 2,000 vehicles per hour per lane. At this point in the analysis, a typical conservative capacity value would be 1,000 vehicles per hour per lane.

To compare routes, the number of automobiles should be divided by the number of lanes times 1,000 vehicles per hour. The resulting figure expressed in hours is a pseudo time to clear all vehicles from the risk area and is developed only as a means to compare routes, not as a true measure of time to evacuate. The route assignment should be iterated until the time to clear the risk area for each route is in as close agreement as possible. The primary reason for equalizing the clearance time for each route is to ensure that evacuees will follow the movement plan rather than selecting the fastest route out of the risk area which may cause an imbalance or overload in certain host areas. Figures 3-3 and 3-4 show the initial and final iteration for the San Antonio risk area.

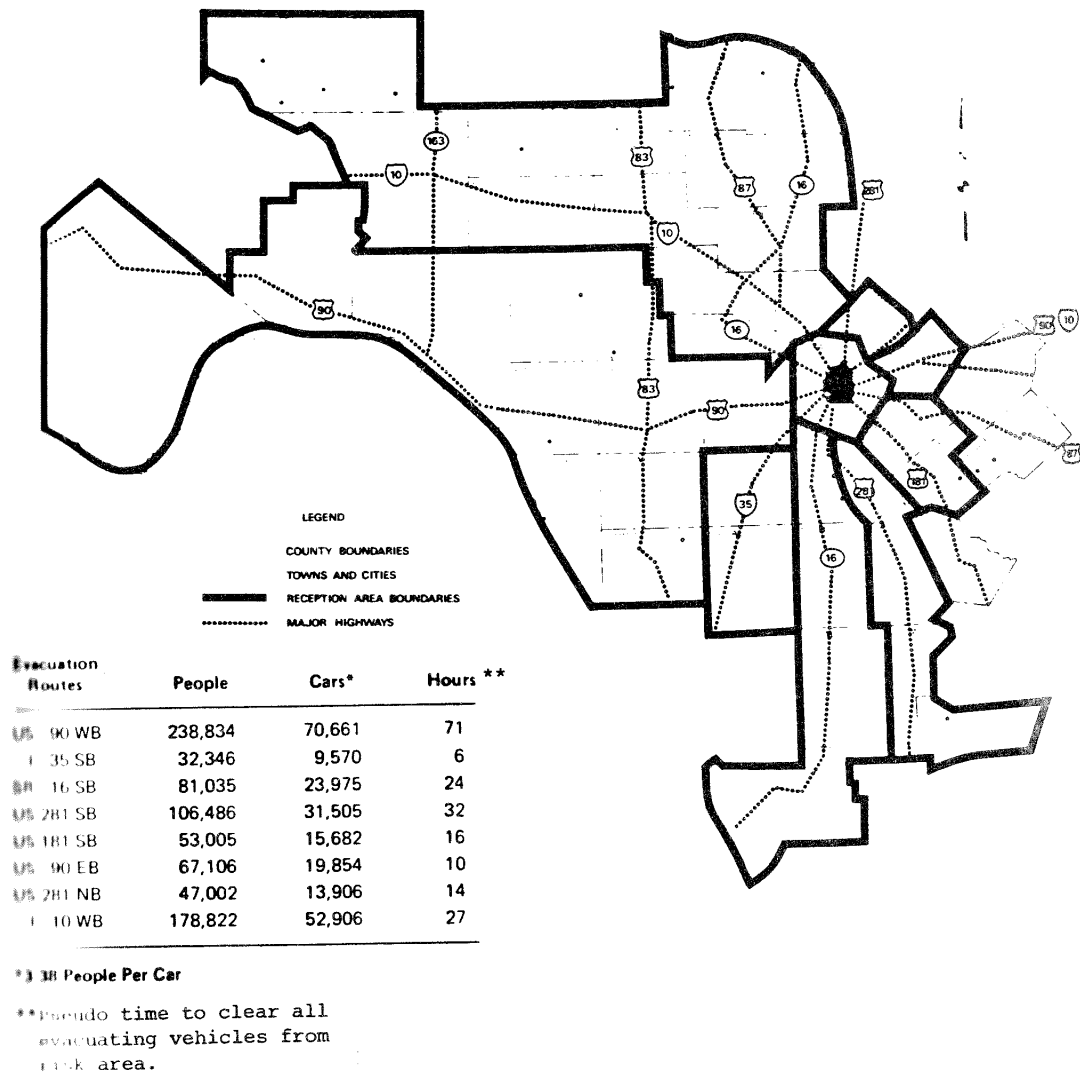
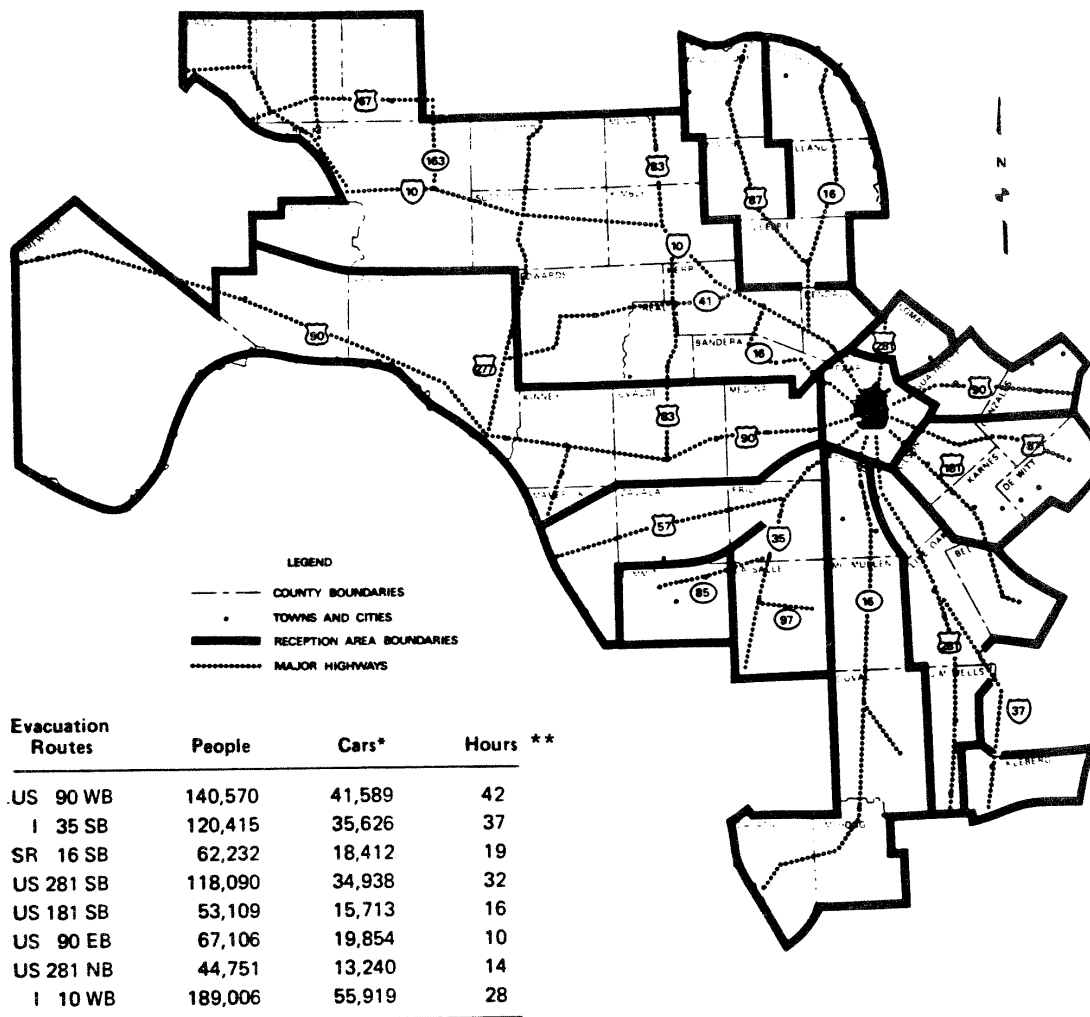


Figure 3-3

FIRST ITERATION OF TRAFFIC ASSIGNMENT FOR SAN ANTONIO



*3.38 People Per Car

**Pseudo time to clear all
evacuating vehicles from
risk area.

Figure 3-4

THIRD AND FINAL INTERACTION OF TRAFFIC ASSIGNMENT FOR SAN ANTONIO

The technique for reassigning host counties is to determine from the initial traffic assignment which movement corridor needs to be reduced in size to lower the loading on that highway. The peripheral counties within that movement corridor are examined to determine if there are adequate roads servicing that county from highways in an adjacent movement corridor. For example, the movement corridor for U.S. 90 (westbound) shown in Figure 3-3 originally contained 11 counties including Edwards and Real in the north. From the highway map it was determined that these two counties could be served from I-10 (westbound), using US-83 and SR-41. Through this trial and error process, the boundaries for the movement corridors are readjusted until the movement times* for each route are as near parity as possible. For example, the movement time* was reduced from a range of 6 to 71 hours (Figure 3-3) to a range of 10 to 42 hours (Figure 3-4).

The above technique is intended for those situations where there is relatively little competition between the risk areas for hosting capacity. In those areas such as the Northeast Corridor of the Chicago-Detroit area more complex assignments will be required.

Identifying Risk Area Population for Assignment

The steps outlined above assigned traffic to the most appropriate routes without regard to the specific source or location of the risk area population. To provide specific, easily understood instructions to the risk area population, a more specific assignment is necessary.

The most common assignment technique traditionally used in the CSP's was to produce a map which identified by geographical area the residents assigned to a shelter or cluster of shelters. This technique of identifying an assignment area on a map is also suitable for relocation planning. The major drawback to this technique is that it requires the ability to decipher a map, which is not existent throughout the population.

Regardless of how the areas are assigned, it is still necessary to account for the population within the designated area. While a number of techniques are available for segmenting the population (e.g., zip code areas, precincts, legislative districts, etc.) the two most commonly used are census tracts and telephone prefixes. In the former case, the data is readily available, but difficult to transmit to the public since few people know their tract number and would need a map. In the latter case, the prefix of the telephone number (the first three digits) corresponds

* Movement time is used here to describe the time to clear the risk area not the time to reach the designated host area.

to a telephone company wire center which usually has a specific geographical boundary for service and can thus be used to identify specific segments of the population by geographical area. The steps in specific population assignment using either of these techniques are described below.

The first step in the assignment process is to determine how many people in each census tract or telephone wire center will be assigned. Since the essential employees will be assigned to specific nearby areas, they should be eliminated from the census tracts by making the assumption that they are uniformly distributed throughout the risk area. The initial traffic assignments should also be reduced to compensate for these assignments. The aggregate number of key workers should then be added to those routes leading to the host counties allocated to them.

The detailed assignment to routes is again an iterative process where the census tracts, for example, closest to each route are assigned to that route. The number of vehicles or people are assigned from closest to furthest census tract until the route is at capacity. For example, route US-281 northbound may have a capacity of 32,000 persons or 9,000 vehicles. If each wire center or census tract has a population of 15,000, then two tracts or wire centers would be assigned to that route. The process is repeated for each route until a reasonable assignment results (i.e., reasonable in the sense that the proper number of persons/vehicles is assigned to each route and the internal vehicle access in the risk area to the route assigned is proximate and without major conflict with other route assignments).

4. STATE CRISIS RELOCATION OPERATIONS PLAN

The previous sections of this volume of the Guide described the procedures for identifying the risk areas, the risk area population, and the host areas to which the risk population will be assigned. Major problems will result from this relocation which must be analyzed and solutions developed to overcome or mitigate them. Finally, operational plans must be prepared and organizational responsibilities must be assigned to carry them out.

This section discusses the State-level planning and describes the general form and content of the State Operations Plan needed to support crisis relocation. Later sections discuss in more detail the planning for each major operational element for which that State will be responsible.

GENERAL PLANNING APPROACH

The major planning effort required is to determine the resources that will be required to support the relocated population and how those resources should be controlled and distributed. Plans must also be developed for the employment of State forces in support of local operations.

Planning for Redistribution of Resources

Of all the goods and services consumed today, relatively few are essential to survival. Within the limited time frame envisioned for crisis relocation--a few weeks--even fewer elements are essential. Table 4-1 lists those items which are required to support the relocated population.

In general, these goods and services are supplied by privately owned and operated companies. Over the years, these companies have developed organizational and operational arrangements--both internal and intercompany--that have resulted in production and distribution systems that operate efficiently to meet the normal pattern of consumer demands. It is highly unlikely that an alternative or substitute system could be constructed quickly that would operate as well.

The relocation of population during a crisis situation would alter the geographical pattern of the demand for goods and services and possibly that of production and supply. It would also alter the nature of the demand because, inevitably, supply of goods and services would have to be restricted to essentials. These changes in

Table 4-1 Essential Supplies and Services for Crisis Relocation

4-2

<u>Health Supplies and Equipment</u>	<u>Sanitation (Including Sewage Treatment) & Water Supply</u>
<ul style="list-style-type: none"> • Pharmaceuticals • Blood Collecting and Dispensing • Supplies • Biologicals • Surgical Textiles • Emergency Surgical Instruments and Supplies • Laboratory Equipment and Supplies 	<ul style="list-style-type: none"> • Water and Sewage Treatment • Water Supply & Sewage Treatment Materials <ul style="list-style-type: none"> - Coagulants - Disinfectants - Miscellaneous • Insects and Rodent Control Materials <ul style="list-style-type: none"> - Insecticides - Rodenticides • General Sanitation Materials
<u>Food</u>	<u>Housing and Construction Materials and Equipment</u>
<ul style="list-style-type: none"> • Milk • Meat and Meat Alternatives • Vegetables and Fruits • Grain Products • Fats and Oils • Sugars and Syrups • Adjuncts 	<u>General Use Supplies and Equipment</u>
<u>Body Protection and Operations</u>	<ul style="list-style-type: none"> • Batteries • Tools • Construction Equipment • Trucks • Portable Lighting
<u>Electric Power</u>	<u>Transportation</u>
<u>Fuels</u>	<u>Telecommunications</u>
<ul style="list-style-type: none"> • Petroleum Products • Gas • Solid Fuels 	<u>Defense-related Production and Services</u>

demand would require a rapid adjustment of the production/distribution system.

The State Role

Operators of existing essential industries and services will require two types of information to adjust and operate the supply/distribution system under crisis relocation conditions. First, they must know what essential items are to be supplied and distributed. Second, they need to know the planned geographical distribution of the people and the nature of the demand. Essentially, this information must come from the State because only the State and its local governments have the resources and/or the authority to develop this information.

In addition to the identification of the essential items to be supplied and distributed, quantities and recipients must also be specified. That is, who gets how much of what. This issue involves not only the allocation of end items for consumption by the people but also goods and services required for production and distribution. Once again, this is an activity for the State because only the State has the authority to establish such allocations.

Consequently, planning for resource support activities must define the kinds of goods and services that are to be supplied in the crisis relocation situation as well as the organizational arrangements and the operations necessary to assure the availability of these goods and services to those who need them.

The coordination and control of these resources should, insofar as possible, be assigned to State agencies that normally deal with the matters to which the activities pertain. Existing State plans for emergency operations or emergency resource management may already contain assignments of the activities needed for crisis relocation, and the planning team should use such plans as a guide. If these plans do not exist or do not fit the requirements, maximum reliance should be placed on existing organizations within the State government.

Role of Agencies and Industry

Expert counsel exists within the State government and in the involved industries. The planning team should approach State agencies who have assigned emergency responsibilities with respect to the goods and services, or State agencies who normally deal with such goods and services. If there is no appropriate State agency, industry, or possibly trade associations, should be approached. To

obtain expert counsel from these groups may require patience and tenacity. If at all possible, it would be advantageous to include representatives of these organizations on the planning team or on an advisory panel.

Sequence of Resource Support Planning

The preferred sequence of resource support planning is to address first those elements of the plan that produce information or that would have an impact on other elements of the plan. Table 4-2 shows a logical sequence of planning for resource support in a State CRP.

Food should be addressed initially because the supply of food is critical to survival and probably represents the largest quantity of goods to be supplied. In addition, the operations of the food distribution system in crisis relocation will impose requirements on other systems (i.e., transportation, electric power, water supply, etc.).

Next, the items in Group 2 should be addressed without preference among them. It is possible that one organizational element activities would be largely the same for each. Group 3 is next because Groups 1 and 2 would generate most of the transportation requirements and, in turn, transportation would generate a large part of the petroleum requirement. Electric power generates a substantial fuel requirement, but because of the reserves normally maintained, this might not be a critical requirement in the crisis relocation situation.

Group 4 should be treated next because the requirements for water would be established by the hosting allocation and by the operations planned for Groups 1 through 3. The other items are included in this group because either the materials or the people who normally deal with them are closely related.

Electric power is the next planning element to be developed because, for all practical purposes, the demand has been established by the hosting assignment and the activities planned for Groups 1 through 4.

Telecommunications is treated last because the demand for telecommunications is generated from the information plans for overall direction and control, and that of the several supply/distribution systems.

Table 4-2

SEQUENCE FOR RESOURCE SUPPORT PLANNING

Group 1.	Food
Group 2.	<ul style="list-style-type: none"> – Body Protection and Operations – Housing and Construction Materials and Equipment – General Use Supplies and Equipment
Group 3.	<ul style="list-style-type: none"> – Transportation – Fuels
Group 4.	<ul style="list-style-type: none"> – Water Supply and Sewage Treatment – Sanitation and Water Supply Materials – Health Supplies and Equipment
Group 5.	Electric Power
Group 6.	Direction and Control
Group 7.	Telecommunications

After planning for these supply and service systems, the planning team should address the mechanisms for overall direction, control, and coordination of these activities. In addition, the plan for each of the supply/distribution systems must contain its own element of direction and control. The direction and control plan should contain an organization plan, an operations plan, and an information plan for each supply system.

Planning for Deployment of State Forces

State employees and organizations will be deployed during crisis relocation to conduct emergency operations that are State functions (normally in State facilities) as well as to assist local governmental agencies. Examples of the former are the functions of the State Police or Highway Patrol in traffic regulation on State and Federal highways, the establishment of State Emergency Operating Centers, and mobilization of State-owned construction equipment at predesignated State corporation yards. Examples of the latter would be the assignment of State Police to assist local governments in maintaining law and order, or the assignment of social services workers to host area reception centers.

In this element of planning, it is necessary to assign the operational function to a specific State agency. The functions to be carried out should be clearly identified along with the positions and manpower that will be required, the authority that has been delegated, and the degree of coordination that will be required with other agencies. In the latter case, it may be advantageous to specify the limit of their responsibilities if there are other agencies with similar or related functions.

Expected Level of Planning Detail

One of the recurring questions asked by State NCP planners during the pilot projects involved the level of detail expected in the State plan during Phase I. Generally, the State plan should be as complete as possible to provide as much crisis relocation capability as early as possible.

There has been a tendency, particularly in the food annexes, to develop organizational assignments, but not actual operations plans. If a minimal capability for operations is to exist, it is necessary to identify the activity or resource needed, where it is needed, how much is needed, and how it is to be obtained. The plan must then assign this responsibility to an organization and describe how it is to be carried out.

For example, in the case of food, it will be necessary to determine which companies now distribute food in a particular risk area. Instructions must be prepared to tell them where they must

redistribute this food and the anticipated volumes that will be required during what time period. This need not be defined in terms of specific commodities, but at least in terms of how many people must be supported at each host area. Since the State does not normally distribute food to the general population, it will be necessary to enlist the aid of food industry representatives in the planning process. Normally, this would be done through the State Department of Agriculture which would be assigned the emergency responsibility for control and coordination of food products.

It is, therefore, not enough just to assign this responsibility to a State agency. It requires the NCP planner to develop an operations plan (or annex) sufficiently detailed so that the food distributor is aware of how much food (or how many people are being relocated) he must supply to what location in what time frame. The detailed operations plan prepared by the food supplier is not expected to be developed during this phase of the study. These plans will be developed in the final phase when detailed planning for essential industries and organizational relocation will take place.

In other areas of State operations, such as support of local government operations, the function may be identified but not qualified. In that case, an outline of the annex should be prepared now, with the detail being filled in at the completion of the Phase II planning.

FORM AND CONTENT OF STATE PLAN

The form of the State operations plan for crisis relocation will be determined primarily by the format and organization of existing plans within the State. It may be an individual plan with supporting annexes covering only crisis relocation. It may be an integral part of an overall "umbrella" disaster plan which addresses all forms of disaster operations. In this case, CRP may form an annex to the umbrella plan.

Basic Plan

The basic State CRP should present statements of the situation and of the assumptions on which the plan is based. This provides a framework for periodic review to determine whether the situation has changed and whether the assumptions still appear valid. The basic State CRP should also contain a statement of the State's mission in crisis relocation. Everything in the plan must derive from, and be consistent with, that mission statement.

A statement of the concept of operations under the plan and a brief description of the emergency organization should be included, as well as a brief statement of the basis of authority for administration and logistics for direction and control. Detailed specification of operations, organization, administration and logistics, and direction and control should be contained in appropriate annexes and appendices. The major objective of the State plan is to provide a concise, clear picture of the overall approach.

A significant part of the basic State CRP is the designation of risk and host areas and the assignments of risk area populations to host areas as discussed in Section 3. This part of the plan should provide appropriate maps and listings, either as integral parts or as supporting parts equivalent to appendices. Other subjects of general application may also be detailed in appendices to the basic plan.

Supporting Annexes

The basic State CRP should be supported by the specification of organization and operations. How the supporting parts are structured and arranged will depend on accepted practice in the State. In general, two basic patterns are available for structuring the supporting documentation: functional and organizational. In other words, each annex can be focused on either function (what is to be done and who is to do it) or on organization (the organizational unit involved and what the unit is to do).

In considering which of these two patterns to use, keep in mind that the primary purpose of the CRP is to specify what is to be done. The secondary purpose of the CRP is to specify the organizational arrangements for accomplishing what is to be done. To reflect this relative importance, the emphasis should be placed on functions and secondarily, on the organizational arrangements for accomplishing that function.

The term "organizational arrangements" is used here in preference to "organization". Primarily, it is desirable to assign emergency functions to existing agencies whose normal functions most nearly coincide. In many cases, several State agencies may be assigned to the same emergency function. It is also desirable to maintain the organizational integrity of the several agencies assigned to the same function. This means that the "organizational arrangements" for accomplishing the emergency function consist of assigning parts of the function (by duties, geography, etc.) to the participating agencies, and most importantly, establishing the mechanism for coordinating these efforts.

In constructing supporting documentation for the basic CRP, it is desirable to prepare an annex for each major emergency function. This annex would establish the mission, the detailed functions, the situation and policy guidelines, the participating agencies, and the organizational arrangements for the function. In turn, this annex would be supported by appendices specifying, in detail, organizational arrangements, operations, and the information and communications plans. It would be further supported by an appendix for each participating agency, specifying for that agency its organization, operations, information and communication plans, and its crisis relocation plan. An abbreviated index for a State CRP using this structure for the supporting documentation is shown in Figure 4-1.

If the State prefers to emphasize its organization, the supporting documentation can be so oriented. In this case, each annex would be addressed to a major State department or agency. The basic annex would specify the mission(s)--more than one if the department were assigned to more than one emergency function--the functions necessary for each mission, the participation of subordinate units in these functions, the situation and policy guidelines, and the organization. Each annex would be supported by alpiners, and the organization. Each annex would be supported by appendices specifying in detail the organization, operations, the information and communications plans, and the department's CRP.

A prototype State CRP (Ref. 6) shows how the functional pattern can be converted to the organizational pattern. This prototype reflects the current organization of the State of Colorado and may not resemble that of other States. This organization was selected for demonstration and the prototype plan is not the official CRP for Colorado. Of special note are the charts on Pages 45 and 46 of the prototype plan. These charts show assignments to State departments by function on Page 45 and by department on Page 46. This cross reference is convenient both for the planner and the operator. Similar charts should be included in every State CRP no matter whether the annexes are in the functional or the organizational pattern.

When the organizational pattern is used, special attention should be given to specifying the organizational arrangements for coordinating the efforts of several agencies assigned to the same function. These arrangements can be detailed in the annex pertaining to the department assigned primary responsibility for the function and referred to in the annexes for the others. Alternatively, they can be specified in the Basic Plan.

Figure 4-1: INDEX FOR A STATE CRISIS RELOCATION PLAN

BASIC PLAN

- I Situation and Assumptions
- II Mission
- III Execution
 - A. Concept of Operations
 - B. Emergency Organization
- IV Administration and Logistics
- V Direction and Control
- App. 1 Risk Areas to be Evacuated
- App. 2 Assignments to Hosting Areas
- App. 3 Military Dependents Support
- App. 4 Emergency Organization
- App. 5 Staffing
- App. 6 Checklist of State Crisis Relocation Operations
- App. 7 Relocation Instructions for the Public

ANNEX A. DIRECTION AND CONTROL

- I Mission
- II Functions
- III Participation
- IV Situation and Assumptions
- V Organizational Arrangements
- App. 1 Organization for Direction and Control
- App. 2 Direction and Control Operations
- App. 3 Information for Direction and Control
- App. 4 Communications for Direction and Control
- App. 5 CRP for Governor and his office
- App. 6 RADEF

ANNEX B. LAW AND ORDER SERVICE

- I Mission
- II Functions
- III Participation
- IV Situation and Assumptions
- V Organization
- App. 1 Organizational Arrangements for Law and Order Service
- App. 2 Law and Order Service Operations
- App. 3 Information for Law and Order Operations

Figure 4-1: INDEX FOR A STATE CRISIS RELOCATION PLAN (continued)

App. 4	Communications for Law and Order Operations
App. 5	CRP for X xxxxx
App. 6	CRP for Y yyyyy
App. 7	CRP for Z zzzzz
ANNEX C.	FIRE AND RESCUE SERVICE
ANNEX D.	HEALTH AND MEDICAL SERVICE
ANNEX E.	RECEPTION AND CARE SERVICE
ANNEX F.	RESOURCE AND SUPPLY SERVICE
ANNEX G.	FOOD SUPPORT PLAN
ANNEX H.	GENERAL SUPPLY SUPPORT PLAN
ANNEX I.	TRANSPORTATION SUPPORT PLAN
ANNEX J.	FUEL SUPPORT PLAN
ANNEX K.	HEALTH SUPPLY SUPPORT PLAN
ANNEX L.	WATER AND SEWAGE SUPPORT PLAN
ANNEX M.	ELECTRIC POWER SUPPORT PLAN
ANNEX N.	TELECOMMUNICATIONS SUPPORT PLAN

Legislative and Judicial Branches

Planning for government operations in emergencies has in the past been directed primarily to the executive branch. However, if a State CRP is to be complete, it must contain plans for the State judicial and legislative branches. The important requirements for these plans are: a statement as to whether the branch will continue to function during the relocation and, alternatively, a statement as to what the members of the branch will do if it does not function on the one hand, or if it does, on the other.

5. PLANNING FOR FOOD SUPPORT

Planning for food support at the State or regional level is a matter of choosing from among the possible alternatives of how the food that is available or that may become available will be distributed to the relocating population. It also involves setting up arrangements for putting the food and feeding the people is a matter for host area reception and care and is addressed in the detailed planning activities in Phase II.

Because of its major significance in supporting crisis relocation, extensive research has been conducted in food supply and distribution system planning. The focus on detailed food support planning in pilot projects has been interpreted by some NCP planners as indicative of the level of detail required in developing their initial State/regional CRP. Based on this misconception, many NCP planners argue that the prime responsibility for food support planning should be invested with the appropriate State agency (i.e., Department of Agriculture).

It should be understood from the outset that the planning requirements during this phase are entirely within the purview of the NCP planner and do not require specialized expertise in the food supply field. The following guidelines reflect a simplified version of the predecessor Working Draft Guide. Supplemental data and additional planning details are contained in References 7 and 8.

PLANNING GUIDELINES AND APPROACHES

Planning for the food resource support at the State or regional level is a four-step process:

1. Analysis of the food requirements during crisis relocation
2. Analysis of the existing food supply/distribution system
3. Selection of the operating pattern
4. Planning the State emergency operation:
 - Organization
 - Deployment
 - Procedures

These steps are discussed below.

Requirement for Food

Estimating the requirement for food is a matter of applying a use rate to the number of people to be fed. Use rates in pounds/week for the accepted emergency food standards are shown in Table 5-1. It should be recognized that these requirements compare favorably with actual consumption levels and do not represent "worse case" or hardship conditions.

Numbers of people by county or other selected planning area will be obtained from the host area assignment (see Section 3). Making the estimate, then, is the process of filling out a table such as that shown in Figure 5-1.

Food requirements to be considered should include not only the daily consumption of the relocatees and host area residents, but also the residents of non-host/non-risk counties. There is also a need to stockpile a sufficient supply of food for use in the shelter period should attack actually occur. In calculating the food requirements for the shelter period the calories per day per person can be substantially reduced from the 3,000 calories per day contained in the 1975 consumption levels shown in Table 5-1. Extensive shelter tests have shown that a diet of 1,000 calories per day is adequate in the shelter environment.

Analysis of Existing Food Distribution System

Food distribution encompasses the functions of processing, warehousing, transportation, and sales of food from the farm gate to the local consumer outlet (grocery stores, restaurants, institutions and in-plant feeders).

Planning for food support at the State or regional level is addressed chiefly to the wholesale and consumer outlet elements of the distribution system. In planning for a crisis relocation, it is not possible to predict how many people would be fed in private houses, in existing institutions, or in the congregate feeding facilities to be established. Substantial flexibility must be available for the locality in establishing its patterns of operations. Therefore, food support planning at the State level need not be concerned with the detailed pattern of distribution at the consumer outlet level. What the State plan must do is establish basic principles, make general assignments of function, and assure that machinery will exist to make the necessary adjustments--at State and local levels--should crisis relocation be undertaken.

Warehousing includes the activities of receipt, storage and issue carried on by independent, cooperative, and voluntary food wholesalers, brokers, and

Table 5-1. National Emergency Food Distribution Allowance (NEMFDA)

FOOD GROUPS AND FOOD ITEMS		AMOUNT PER WEEK [*]	
		NEMFDA	Average 1975 Consumption
Meat and meat alternatives (fresh, frozen, canned, and cooked meats, poultry, fish, shellfish, cheese, dry beans, peas, soya products, and nuts)		Boneless 3.0 pounds Bone in 4.0 pounds	5.0 pounds
Eggs (fresh, frozen, and dried)		6 eggs	5 eggs
Milk (fresh, fluid, canned, evaporated, condensed, and dried)		7 pints	5 pints
Cereals and cereal products (flour including mixes, fresh bakery products, corn meal, rice, hominy, macaroni, and breakfast cereals)		4.0 pounds	2.6 pounds
Fruits and vegetables (fresh frozen, canned, and dried, including melons)		2.0 pounds	6.0 pounds
Food fats and oils (butter, margarine, lard, shortening, salad and cooking oils)		.5 pounds	1.0 pounds
Potatoes (white and sweet)		2.0 pounds	1.5 pounds
Sugars, syrups, and other sweets		.5 pounds	2.3 pounds

^{*} data obtained from "Food Consumption Prices Expenditures"
Supplement for 1975 to Agriculture Economic Report No. 138 U.S. Department of Agriculture

Figure 5-1. Estimate of Requirement

County	Number of People	Direct Consumption	Total Requirement

RESOURCE: _____

the distribution centers of major grocery chains. For describing the warehousing part of the food distribution system at the State or regional level, the most effective approach is to conduct a limited number of interviews. This approach should begin with the "Study of Grocery Store Sales" (Ref. 9) which is published annually by Supermarket News to show the number of stores, market share, and principal supplier of each chain and group of independent retailers in 287 cities. Trade directories, such as Chain Store Guide, (Ref. 10), list the market territory covered by individual distribution centers and identify individuals that may be contacted. A guide to number and location of stores served by each distribution warehouse of each food chain in the United States is published annually (see References 9, 10, 16, 17). Food facility information is also available from USDA ASCS.

Data that will be useful in the analysis of existing food distribution systems are summarized in Table 5-2.

Selecting the Operating Pattern

Capability of the food distribution system to supply food to the people is limited principally by the amount of food available, by the amount of food that could be handled at wholesale and retail levels, and by the amount of transportation stress it can withstand. Research on the food distribution system (Ref. 7 & 8) indicates sufficient food would be available for the crisis relocation period and handling it at wholesale and retail levels should not pose insurmountable problems. Therefore, the critical problem for the food distribution system appears to be transportation stress and the available alternatives for operations will pertain mostly to transportation.

Estimating Transportation Stress

The purpose of estimating transportation stress is for evaluating alternative patterns of operation for the food distribution system. Essentially, it involves defining the pre-crisis requirement in ton-miles or some such index, calculating the comparable index for an assumed crisis mode of operation, and comparing the two. Because crisis use rates are roughly the same as normal use rates, unless rationing were instituted the actual number of tons need not be calculated. Institution of rationing will reduce the transportation stress. It can simply be taken that because tons are proportional to numbers of people, the relative distribution of people before and after the relocation movement is equivalent to the relative distribution of demand for tons of food.

As noted previously, the details of distribution of food (i.e., the market share assigned to each distributor) through consumer outlets in the host area cannot be predicted. It is sufficient at this stage of planning to simply assume that the relative proportions existing among

Table 5-2. Data for Food Warehousing Analysis

DESIGNATED CRP REPRESENTATIVE

Name and Title
Home and Business Phone

WAREHOUSE INFORMATION

Size (square feet)
Number of Loading Docks
Estimated Time to Empty with Present Equipment and Personnel
Days at Wholesale (Inventory level)

TRANSPORTATION EQUIPMENT

Number of Tractors
Number of Trailers and Capacities
Miles per Gallon (loaded)
Vehicle Range (miles per tank of gas)
Vehicle Down Time (hours per day)
Average Loading Time (hours per truck)

PERSONNEL

Number of Warehouse Personnel
Number of Drivers
Required Emergency Personnel

MARKETING INFORMATION

Annual Throughout (million pounds/year or dollar volume)
Number of Stores Served
Location of Stores Served
Days at Retail (Inventory level)

SOURCES OF SUPPLY

In-Transit Inventory (days)
Incoming Transportation Modes (percent truck, rail, etc.)

these outlets before the relocation will remain the same after the relocation. It can also be taken as a second simplifying assumption that the relocated population will be where the original host area population was and the transportation distance will be equivalent to that from the warehouse location to the centroid of the pre-relocation population. In most U.S. cities this centroid is the county seat.

The transportation stress factor for any wholesale warehouse or distribution center then can be calculated by the equation

$$S = \frac{\sum N_a \times D_a}{\sum N_b \times D_b}$$

- where
- S = Transportation stress factor.
 - N_a = Number of people after relocation in a county to be served from the warehouse. This is equal to the total number of people in the county times the assigned market share.
 - N_b = Number of people served through a retail outlet before the relocation.
 - D_a = Distance from warehouse to centroid of population in county in which the people in N_a are.
 - D_b = Distance from warehouse to the retail outlet serving the N_b people before relocation.
 - Σ = Symbol to indicate the summation or addition of all population times distance factors.

Other more complex models have been developed, but, in general, their use is subject to the same limitations of lack of ability to predict "market share" at the retail level. These other models are discussed in Ref. 8.

The number of people that can be supplied from a given warehouse will remain unchanged after the relocation unless warehouse operation is changed to increase its throughput capacity. In other words, the total N_a would equal the total N_b unless such changes were made. Thus this transportation stress factor can be used for comparing alternative modes of warehouse operation and alternative warehouse locations. However, from a transportation standpoint, it measures only the magnitude of the problem, and is not usable for comparing alternative modes of transportation operations.

Estimating Transport Equipment and Personnel Requirements

From the food consumption standards in Table 5-1 and the capacity of a truck in pounds, the number of persons supplied by one truckload per week can be calculated (about 1,430). Then, given

N_a , the number of truckloads per week can be calculated. Given D_a and the average speed of the truck, the transit time can be calculated. From number of truckloads and transit time, the number of moving trucks can be calculated and, when allowances for loading and unloading, maintenance, etc., are made, the total number of trucks can also be calculated. Similarly, given numbers of moving trucks, transit times, and limitations on driver work hours, the total number of drivers required can be derived.

Table 5-3 is an example of a summary table that describes the normal food distribution pattern, the revised distribution pattern for CRP, and the additional resource requirements to support the crisis distribution pattern. This table is the essence of the food planning effort and indicates the minimum level of analysis required for State level planning.

PLANNING THE STATE FOOD OPERATION

Given the planning decisions as to patterns and modes of operation for the food distribution system in a crisis relocation, it is necessary to plan how the State would put these decisions into effect and control the functioning of the system during the crisis. The food support plan should have two main elements: the operations plan and organization plan. Examples of food support plans are shown in Appendix E and in the Prototype State Crisis Relocation Plan CPG 2-8-A-1.

Operations for Food Support

Food support activities at the State level during crisis relocation include:

- Allocation of food stocks in the State and available to be used in the State to the several classes of users.
- Control of the consumption of food by specifying how much food will be allowed per person, what kinds of food will be allowed, by specifying to whom each distributor may ship, and by rationing available foods if necessary (Figure 5-2 contains a summary of alternative mechanisms for controlling food distribution).
- Allocation of other available resources to the food distribution industry in the amounts needed to accomplish the distribution of food--as allocated and controlled--but with due regard for the needs of other essential activities.

The operations necessary to accomplish these activities involve issuing allocation orders, promulgating control orders,

Table 5-3
SUMMARY OF REVISED WHOLESALE-RETAIL DISTRIBUTION PATTERNS

DISTRIBUTION CENTER		NORMAL OPERATIONS				CRISIS RELOCATION OPERATIONS						
		TOTAL RETAIL OUTLETS SERVED	ESTIMATED VOLUME	TRANSPORTATION RESOURCES			CRP SHIPMENT REDIRECTION		TRANSPORTATION STRESS FACTOR	ESTIMATED ADDITIONAL RESOURCE REQUIREMENTS		
				Tractors	Trailers	Drivers	From Stores In These Counties	To Stores In These Counties		Tractors	Trailers	Drivers
SAFEWAY, Denver		150	837	180	350	200	Denver, Adams, Jefferson and Arapahoe	Bent, Clear Creek, Delta, Garfield, Mesa, Moffet, Montrose, and Routt	2.72	49	95	160
						El Paso	Alamosa, Chaffee, Fremont, Gunnison, La Plata					
						Pueblo, Boulder	Huerfano, Las Animas					
KING SOOPERS, Denver		31	405	50	100	60	Denver, Boulder, Jefferson, and Pueblo	King Soopers in Larimer; City Markets in Delta, Eagle, Garfield, Mesa, Moffet, Montrose, Proers and Routt	7.45*	65	125	120
							El Paso	City Markets in La Plata				
ASSOCIATED GROCERS, Denver		553	454	76	80	87	Denver, Adams, Arapahoe, Jefferson	Independent Outlets in All Denver Host Counties	2.38	--	---	69
							Boulder	Independent Outlets in Boulder Host Counties				
							El Paso	Independent Outlets in All Colorado Springs Host Counties				
							Pueblo	Independent Outlets in All Pueblo Host Counties				
Pueblo		148	124	29	38	29			1.46	--	---	--

* Stress factor reflects additional travel distance for entire Dillon Company.

(ATTACHMENT 1, CONTINUED)

DISTRIBUTION CENTER LOCATION	TOTAL RETAIL OUTLETS SERVED	ESTIMATED VOLUME	TRANSPORTATION RESOURCES			CRP SHIPMENT REDIRECTION		TRANSPORTATION STRESS FACTOR	ESTIMATED ADDITIONAL RESOURCE REQUIREMENTS		
			Tractors	Trailers	Drivers	From Stores In These Counties	To Stores In These Counties		Tractors	Trailers	Drivers
NATIONAL TEA COMPANY, Denver	33	104	30	32	33	Denver, Boulder, Adams, Arapahoe, Jefferson	Mass feeding centers in Denver, Boulder Host Counties	3.83	24	26	51
						El Paso	Mass feeding centers in Colorado Springs Host Counties				
						Pueblo	Mass feeding centers in Pueblo Host Counties				
NOBEL FOODS, Denver	NA	100	50	50	60	Boulder, Denver, Adams, Arapahoe, Jefferson	Restaurants & Institutions in Denver, Bould Host Counties	2.72	14	14	48
						El Paso	Restaurants & Institutions in Colorado Springs Host Counties				
						Pueblo	Restaurants & Institutions in Pueblo Host Counties				
CITY MARKETS, Grand Junction	19	NA	NA	NA	NA	Follow pre-crisis distribution patterns expanding operations as necessary to deliver King Soopers Products		3.31*	10	20	17
TOTAL ESTIMATED ADDITIONAL RESOURCES:									162	280	465

* Stress factor reflects additional travel distance for entire Dillon Company.

issuing shipment control orders to the food distribution industry, and activating a rationing system. Each of these includes these necessary operations: collecting information, analyzing information and drawing conclusions as to the situation, deciding what is to be done, and informing those who need to know. The State will also likely be required to supply information to the Federal Government.

In summary, the operations plan should have three parts. The first part should specify what operations are to be done and under what circumstances. The second part should specify the staffing; i.e., who will fill each position in the organization and who will succeed to it. The third part should specify the content and form, source and destination, and timing of each piece of information needed to accomplish the necessary operations. It should not contain position descriptions, nor should it specify routines.

Organizing for Food Support

The food support organization plan should specify only those positions needed to accomplish food support activities. It should also specify duties and authority of each position. Finally, channels of communication should be established. The organization plan should not identify the individuals who will fill the positions (this information is part of the operations plan).

It may be concluded from the nature of the operations that the organization plan for food support should have three major elements: Food Allocation and Control, Food Industry Operations, and Direction and Control.

Figure 5-2
SUMMARY OF ALTERNATIVE CONTROL MECHANISMS

ALTERNATIVE CONTROL METHOD	CHARACTERISTICS & REQUIREMENTS	PRINCIPAL ADVANTAGES	PRINCIPAL DISADVANTAGES
Unregulated market solution with free mass feeding facilities.	Price levels ration available supply of commodities from retail shelves prior to relocation and for supplies in host area. Payment made directly from buyers to sellers; access to mass feeding facilities by nonrisk area residents and relocatees. Free flow of food-stuffs into host area to augment supply.	Inflated prices provide profit incentive to divert supplies to host area.	Available supply allocated by ability to pay principal. Available stocks diverted by unproductive hoarding. Overuse of free mass feeding facilities by those with ample supplies. Bunching of demand in early days.
Regulated retail prices with a dollar limit per retail transaction; free mass feeding facilities.	Upper limit placed on dollar value of each retail transaction. Limitation (and price controls) in effect in risk area prior to relocation and in host areas. Access to mass feeding facilities by nonrisk area residents and relocatees. Payment direct from buyers to sellers.	Discourages some hoarding since access to retail supplies limited due to queues. Distribution of supplies becomes relatively even as prices phased downward by Gov't imposed price controls. Simple to apply and easily understood.	No assurance of access to host area retail supplies since means of payment required. Group purchasing not possible due to per transaction limitation. Overuse of free mass feeding facilities by those with ample supplies. Risk area retail shelves may not be fully utilized. Bunching of demand not prevented. Gov't must police each retail facility to enforce price regulations.
Welfare system with dollar or weight limit per transaction. Free provision of all food.	No payment for food for home preparation or from mass feeding facilities. Dollar limit per retail transaction. Government reimburses sellers.	Means of payment not required so access to supplies not precluded by ability to pay. Discourages hoarding of retail supplies due to queues. Risk area retail shelves likely to be cleared.	General overuse of all distribution facilities since no payment necessary. Difficult to reimburse retailers since careful policing of sales receipts is required. Group purchasing not possible. Overuse of mass feeding facilities by those with ample supplies. Bunching of demand not prevented.
Price controls and ration coupons.	Requires ration coupons for access to host area retail supplies. Coupons set upper limit on dollar value of commodities purchasable. Group purchases possible. Coupons divisible and required for host area retail purchases and at mass feeding facilities. Payment by means of coupons between buyers and sellers. Gov't reimburses sellers based on coupons and can, if desired, bill buyers after crisis. Coupons color-coded for day of week designation.	Means of payment not required in host area. Group purchase possible. No hoarding possible. No incentive to overuse mass feeding facilities since coupons must be used. Flexible subsidy possible since Gov't reimburses sellers and can bill buyers.	Requires detailed planning and printing of coupons. Greater administrative cost involved with coupon disbursement, collection of payment from relocatees and reimbursement to sellers. Possible misuse if multiple coupons obtained.

6. PLANNING FOR TRANSPORTATION SUPPORT

Transportation support in the context of a statewide crisis relocation plan focuses on the movement of people and goods after relocation of risk area population to host areas has been accomplished. The operational details of transporting people out of individual risk areas is contained in risk area plans to be developed in a later planning phase (as described in CPG-2-8-C). Consequently, in this annex the role of the State is defined as supplying transportation support during the relocation period.

Transportation support requirements are highly interactive with: (1) the distribution patterns of necessary supplies (e.g., food, fuel, pharmaceuticals, etc.) from secondary sources to the consumer, and (2) the requirements for providing transportation resources for key workers who will commute daily from the host area to the risk area to maintain essential industries and services. Since the precise identification of these requirements is not available in this early CRP phase, planning activities are essentially addressed to structuring an organizational framework to deal with the anticipated requirements. Basic to initial statewide planning is an analysis of the stress likely to be imposed on the transportation system by the distribution system(s) and commuting requirements.

Development of the transportation support element for CRP will generally be based on existing State emergency plans. The actual State planning and coordination for emergency transportation are a function of the policies established by the Office of Emergency Transportation, Department of Transportation. Most State transportation agencies have already established mechanisms for implementing contingency emergency operations which can be adapted for the State CRP. Therefore, the following discussion relates primarily to the analysis of transportation stress factors and the capabilities analyses which will provide the framework for subsequent planning. Supplemental detail on transportation support is available in the research documents Ref. 11.

COMMUTING REQUIREMENTS

Host area assignments will, insofar as is practical, relocate key workers to host areas close to their work location in the risk area. This applies not only to those who will commute back to jobs in the risk areas but also to those whose jobs will be relocated; e.g., staffs of relocated State emergency agencies. The

objective is to minimize travel distances. Nonetheless, minimum commuting distances will relieve only part of the transportation stress. To reduce the number of vehicles and drivers which will be required, it is also necessary to increase their utilization. In normal operations, the average transit bus is in service about one-quarter of the time; chiefly in the morning and evening rush hours. In the crisis relocation situation, it would be desirable to increase this utilization by spreading the load as much as possible. While this is beyond the purview of the NCP planner, it should be considered by the appropriate agencies when planning for the activities for which commuting is necessary.

Local risk area transit buses will undoubtedly be used in the relocation movement for those people who do not have access to private automobiles. (See Risk Area Planning in CPG-2-8-C). At the end of the relocation movement, these buses will be located in the host areas. It appears logical that such buses would be employed for commuting. However, the capability of these buses may not be sufficient and there may be other areas without buses but with commuting requirements. To fill these requirements, intercity bus companies might provide a source of equipment and drivers. In the United States there are almost half as many intercity buses as transit buses. This resource should therefore be considered in planning for transportation support.

Operation of buses for commuting also presents the problem of continued operations in the risk areas. Bus company maintenance facilities are generally located in the risk areas. While some maintenance requirements may be relaxed in the crisis relocation situation, essential maintenance will have to be continued to assure maximum capability from the available equipment. Maintenance activities requiring only mechanic's hand tools can be easily relocated to host areas. Those maintenance functions requiring fixed equipment must be continued in their original location.

TRANSPORTATION OF GOODS

A number of the supplies essential to maintain the relocated population will be transported primarily from wholesale to consumer outlets by truck.

In normal times, the capacity of distributor-owned and independent truck fleets to move these goods is more than sufficient. However, a crisis relocation would increase transit distances and times, thereby subjecting the transportation system to stress. It will also probably increase requirements for trucks and drivers.

Accordingly, alternative approaches to minimize the need for additional trucks and drivers should be considered as well as approaches to providing for the unavoidable increased requirements.

TRANSPORTATION SYSTEM STRESS ANALYSIS

The major purpose of analyzing the stress that relocation can be expected to impose on the transportation system is to identify significant problem areas so that contingency plans may be developed to alleviate (to the extent possible) stressful situations. Since the provision of food to support the relocated population in host areas is a prime requisite, the transportation stress involved in the food distribution system is used as an example in the following discussion. It is, however, applicable to other types of packaged goods to be distributed to the host areas.

When wholesale distribution centers in the risk area are continued in operation, the local adjustments required to direct food to the host areas need not interfere with the flow of national supplies. These adjustments will, however, place a heavy strain on the local food transportation system.

Supermarkets generally receive a minimum of one delivery of dry groceries each week from local wholesalers. Deliveries of meat and perishable items are more frequent. A typical high-volume market may receive an average of four deliveries of dry groceries per week and daily deliveries of meat and perishables. Dry grocery deliveries are made by tractors and trailers owned or leased by the supermarket chain or independent wholesaler and driven by company employees. Most meat and perishables are delivered in a similar fashion.

Recent research has led to the development of mathematical models capable of providing more precise estimates of the increases in vehicle usage imposed by a strategy of crisis relocation. The model used in this research to estimate transportation stress under crisis relocation conditions is patterned after the traffic assignment models currently used throughout the United States in local and statewide transportation planning (See Ref. 8).

The results of analyses using this model in five localities are summarized in Table 6-1. This table shows that the region-wide transportation stress factor exceeds 2.0 in only one of the regions studied. This case encompassed the State of Colorado, which was characterized by long evacuation distances coupled with a heavy concentration of normal business in the Denver metropolitan area which caused vehicle mileage requirements to triple under crisis relocation conditions.

Table 6-1 also shows the transportation stress factors associated with the individual wholesalers undergoing minimum and maximum stress in each of the study areas. In general, the greatest transportation stress was imposed on wholesalers who normally serve a heavy concentration of risk area retail outlets, while wholesalers whose normal range of operation encompassed host area retail outlets experienced minimal amounts of stress. In the case of one chain store with outlets in Denver, Colorado Springs, and Pueblo, relocation from these cities would lead to a stress factor of 7.45. Such stress could be accommodated only with a heavy infusion of additional trucks and drivers from other less critical sectors of the economy.

Table 6-1. Comparison of Transportation Stress Factors* for Five Areas

REGION OR METROPOLITAN AREA	LOCATION OF MAJOR WHOLESALERS	VEHICLE MILEAGE STRESS FACTORS		
		Total Region	Least Stressed Wholesaler	Most Stressed Wholesaler
Detroit	Detroit	1.92	1.20	2.62
San Jose	San Francisco, Oakland	1.18	1.11	1.56
Richmond	Richmond, Washington, D.C.	1.50	1.07	1.92
Colorado Springs	Denver, Pueblo	1.75	1.58	2.92
State of Colorado	Denver, Pueblo, Grand Junction	3.04	1.46	7.45

*Transportation Stress Factor = $\frac{\text{Vehicle Miles under Crisis Relocation}}{\text{Normal Vehicle Miles}}$

Most of the wholesalers felt that the normal vehicle miles traveled in making local deliveries could be doubled under emergency conditions. Additional increases would require additional equipment. Strategies for increasing truck and driver productivity include: the relaxing of regulatory constraints, improving utilization of existing equipment, and obtaining additional equipment and drivers. The larger firms indicated a willingness to lease additional equipment in an emergency, which is their current practice when unusual demands exceed the capacity of their truck fleets.

It appears that availability of trained drivers would be more of a problem under conditions of crisis relocation than availability of trucks and trailers. Union regulations vary throughout the country, but they generally follow Department of Transportation guidelines which currently restrict drivers to ten hours of driving in a 15-hour tour of duty. Relaxation of these rules would ease the problem somewhat, but safety considerations clearly limit the amount of additional driving time that might be achieved. Thus, 12 hours of driving during a single tour of duty might represent an acceptable extension of the current limits.

Relaxation of current regulatory restrictions would also ease the task of scheduling drivers on the longer runs expected under crisis relocation conditions. Even if restrictions are relaxed, additional drivers will probably be needed if the transportation stress factor approaches two.

Many States impose weight limitations on trucks. Waiving of these limits under crisis relocation conditions would improve vehicle utilization. The actual increase in shipment weight resulting from the relaxation of weight restrictions depends both on truck size and on product density. However, it is unlikely that the increase in allowed shipment weight would represent more than 25 percent of the original load. Moreover, the density of food products is such that truckloads of certain dry groceries might be increased by a relaxation of weight limitations. Dry groceries comprise 31 percent of all truckloads shipped by food wholesalers, so about 8 percent would be the upper limit on the overall improvement in truck utilization likely to result from a relaxation of weight restrictions.

One obvious means of coping with the transportation stress is to secure the use of drivers and equipment from other, less critical sectors of the distribution community. This approach is currently practiced on a small scale by most food distributors. Under emergency conditions, additional vehicles and drivers might be obtained on a somewhat larger scale from the household moving industry and from manufacturing firms that shut down for the duration of the crisis. In addition, trucks and drivers making deliveries from food manufacturers to wholesale distribution warehouses might be induced to make local shipments from the warehouse to the host area as part of their return trip. Many manufacturers currently arrange to have their trucks backhaul other commodities on the return journey.

Table 6-2 lists the estimated range of increases in driver and vehicle productivity associated with labor and equipment saving measures. Some of these measures would improve both driver and vehicle productivity. Others would increase vehicle productivity

without increasing driver productivity, or would primarily increase driver productivity. Table 6-2 shows that the average potential increase in driver productivity is 51 percent, while the average increase in productivity possible for existing food transportation vehicles is over 112 percent.

Table 6-2. Summary of Potential Productivity Increases

EMERGENCY MEASURES	ESTIMATED PERCENT INCREASE IN EFFICIENCY					
	Vehicle Time			Driver Time		
	Lower	Mid-Range	Upper	Lower	Mid-Range	Upper
<u>Regulatory Constraints</u>						
Relaxing Driver Restrictions	---	---	---	18%	20%	22%
Relaxing Weight Limitations	4%	6%	8%	4%	6%	8%
<u>Equipment Use</u>						
Minimizing Down Time	37%	54%	71%	---	---	---
Relaxing Maintenance Requirements	15%	17.5%	20%	---	---	---
Eliminating Light Loads	5%	10%	15%	5%	10%	15%
Shipping Only Full-Pallet Loads	5%	10%	15%	---	---	---
Shipping Only Necessary Commodities	10%	15%	20%	10%	15%	20%
TOTAL	76%	112.5%	149%	37%	51%	65%

Figure 6-1 shows the results of Table 6-2 as a function of different transportation stress factors. On the average, a transportation factor of 2.5 would require obtaining 18 percent more vehicles and 71 percent more drivers from other sectors of the economy. These

estimates allow for no attrition in the existing driver force in the emergency and assume that the length of the crisis relocation period will be relatively short. Although Figure 6-1 was prepared from rough estimates of the likely impact of different measures for improving distribution system productivity, it confirms two of the major intuitive observations of distribution managers regarding emergency operations under crisis relocation conditions: first, driver availability is likely to be more critical than vehicle availability, and second, the existing distribution system can support a doubling of vehicle miles for short periods of time without requiring additional transportation equipment.

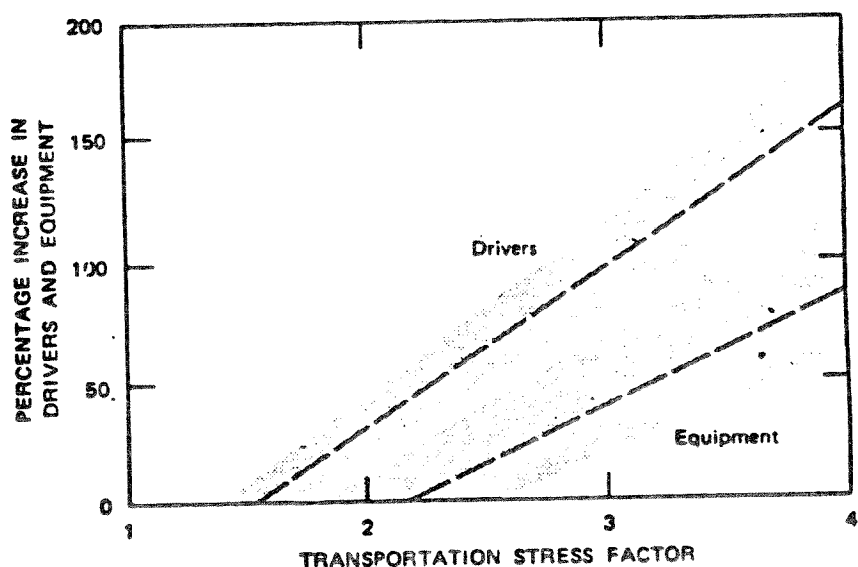


Figure 6-1. Range of Additional Drivers and Equipment Associated with Transportation Stress Factors

CAPACITY ANALYSIS

As discussed above, stress on the transportation system will evolve from the movement of key workers (commuting to the location of their duties in maintaining essential industries/services) and the movement of goods and supplies needed to maintain the relocated

population in host areas. The vehicle and driver requirements for transporting key workers during the relocation period is a function of the number of commuters involved and the distance from the host area to their destination point. This is a relatively straight-forward exercise given the approximate number of key workers (20 percent of risk area population) and given the designated host counties for key workers. The existing transit resources can then be balanced against the calculated requirements to determine if deficiencies exist.

The transportation requirements related to the movement of goods and supplies is a function of what classes of goods must be moved, the quantity required to support the relocated population, and the existing capacity of existing distribution systems. The analysis of transportation stress is generally necessary for other support items in addition to food that must be transported into the host areas (e.g., water and sewage treatment supplies, pharmaceuticals, and fuel). Input to the transportation stress analysis should be available as a result of the planning for the individual support elements.

Some of the approaches that can be applied to meeting transportation requirements, such as relaxation of weight limits and driver restrictions, require government action. This action should be taken in advance of the crisis--possibly in the form of contingent variances from the limits. Other ways, those that must be accomplished by the other support planners, should be brought to their attention and agreement obtained that they will be included in the appropriate support plans.

It is likely that the basic issue will be in the planning required to make available additional trucks and drivers from parts of the economy or activities that would shut down during the relocation. For this, the planning team will need information about the availability of trucks. A source of this information is the National Defense Transportation Association (NDTA) which has 100 chapters in the United States. National Defense Transportation Association was formed to provide volunteer assistance for National defense and National defense planning for State and local governments. Information on driver availability should be available through the Teamsters Union.

7. PLANNING FOR FUEL SUPPORT

In the event that crisis relocation is directed, it can be expected that the Federal government would assume control of primary fuel supplies. Secondary supplies would remain under State control. In general, primary stocks are those either in the hands of the producer, in transit between his facilities, or in transit by common carrier. Secondary stocks are those in the hands of wholesalers or distributors.

For planning purposes, fuel has been divided into the following four categories based on the methods of distribution.

- Petroleum: Crude oil, natural gasoline, unfinished oil, and petroleum products
- Gas: Natural or manufactured gas delivered through pipelines
- LPG: Liquefied petroleum gas delivered by tank or tank truck
- Solid Fuels: All forms of coal and coke made from coal

Primary supplies of petroleum move by pipeline, railroad, and water; secondary supplies move either by tank truck or as case goods (lube, grease). Both primary and secondary supplies of natural and manufactured gas are moved only through pipelines. Primary supplies of LPG are moved by tank (rail or truck); secondary supplies are distributed either by tank truck or in prefilled tanks. Coal and coke primary supplies are moved chiefly by rail; secondary supplies by truck. At the secondary supply level of interest, gas supply is a fixed system; the others are flexible systems. However, most petroleum and LPG are moved in special-purpose tank trucks different from each other, and solid fuels can be moved in general-purpose trucks.

Petroleum, gas, and solid fuel are commonly used in large plants, petroleum and gas for heating large buildings, gas and LPG for home heating and cooking, and petroleum for transportation. Conversion from one fuel to another is possible; some large plants are equipped for two fuels and small gas burning equipment can be converted from natural gas to LPG and vice versa. However, given the short duration of a crisis relocation situation, fuel support planning should envision that equipment using any given fossil fuel will continue to use that fuel throughout the crisis with the possible exception of plants with dual equipment.

Because of the significant differences in the distribution systems and in the end use equipment, fuel support planning should address each of the types of fuel separately. This is not to imply that emergency support organizations should necessarily have four separate elements.

PETROLEUM

The petroleum production/distribution system is characterized by a relatively small number of producers, and a large number of retailers. Most producers have integrated wholesale facilities. Since petroleum is liquid, it must be stored and transported in some sort of vessel (tank) or through a pipeline. Consequently, the petroleum system is partially fixed in that a bulk storage plant or even a small storage tank cannot be moved easily or quickly.

This limits the option of setting up temporary storage in the host area. Tank trucks could be used as temporary storage but they would be needed to transport the petroleum. Therefore, the fundamental planning decision involving petroleum system deployment is to determine which storage and distribution facilities will be continued in operation during the crisis period.

Estimating the demand for petroleum in a crisis relocation is complicated by the variety of uses and the difference in the users. A large electric power generating plant might have a sufficient fuel reserve to last during the crisis relocation period. An independent trucker, however, may have only the fuel in his vehicles and will require resupply if his trucks are to be used.

It is not necessary for the planner involved with petroleum to estimate all demands. The planner responsible for transportation should determine the demand for transportation; the electric power demand by the planner in that area, and so on. It will probably be necessary for the planner to estimate the industrial demand and that for heating and automobiles. To determine the industrial requirement it is necessary to ascertain which major plants would operate the automobile and require resupply in the crisis relocation period. Establishing the automobile requirement is a matter of estimating use of these vehicles during the relocation period. This will probably require adoption of both a policy of restricting automobile use and a means of controlling it.

It is unlikely that all automobile use will be prohibited after the crisis relocation movement is complete. In some cases use of privately-owned automobiles will be the best and/or only means for commuting of essential workers to the risk areas. On the other hand unrestricted use in the host areas would be undesirable because of

the stress it would impose on the distribution system and on host area retail outlets. Therefore, the consumption of gasoline will have to be controlled in a way that will permit only essential usage, i.e., by rationing gasoline or by restricting vehicle movement. Of the two, the latter is preferable. There is more freedom to misuse an allotment of fuel, whereas more control is possible if permission is required for specified trips.

In planning for petroleum support, the actions to be taken in the short period preceding the start of the relocation movement must be considered. On the surface it would seem desirable to draw from retail supplies, and (except for motor fuels) users' supplies in the risk areas while building up those in the host areas. This would mean risk area residents should be advised that they cannot obtain furnace oil, but are urged to keep their automobile tanks full. The opposite would be true of host area residents.

To accomplish this by citizen cooperation may be difficult because the equity would be hard to demonstrate. It might be feasible for gasoline through cooperation by the distributors in slowing down deliveries to retail outlets in host areas and making more frequent, smaller deliveries to those in risk areas. Publicly, then, residents of both the risk and the host areas could be advised to keep their tanks full; the risk area drivers would have available supplies but the host area would have highly limited supplies.

Assistance in obtaining information about the petroleum distribution system, normal demands, and suggestions as to likely problems and solutions should be available from the State agency that normally deals with petroleum and from industry people working through the State agency. Again, it is desirable to assign State and industry people to the State/Regional Planning team or to an advisory panel, which would materially contribute to obtaining this data.

GAS

Gas is distributed through a fixed system; that is, in pipelines from the producer to the end user with storage at places along the network. New users can be added only by construction of new pipelines. Supply can be shut off by closing a valve--at the site of an individual user or to all area users at the main. The rate at which gas can be supplied and used can be controlled within limits through adjusting the pressure in the pipe.

There are two principal issues in gas support planning: 1) which users will be supplied, and 2) which facilities will remain in operation during the relocation period. The solution to the first is relatively straightforward. Gas should be supplied, to the extent possible, to users in the host areas and to those users in the risk area who will continue in operation.

The demand for gas for kitchen use in the host area can be expected to increase with the increase in population. For example, a church kitchen that normally serves one hot meal a week for 100 people might, in a relocation situation, be serving two hot meals per day for 500 people; or a residence kitchen normally serving 3 people might be feeding 12 or 24. Conversely, the demand for space heating should go down. Congregate care buildings would be loaded to capacity with relocatees and since people are a good source of heat, the temperature to which buildings are usually heated can be lowered.

The best available sources of information and assistance in planning for gas support are the State agencies that normally deal with gas, and the utilities who operate the gas distribution systems. If possible, representatives of these groups should be assigned either to the team or to an advisory panel.

LIQUIFIED PETROLEUM GAS

LPG is a byproduct of the production of petroleum and natural gas. Although it is used as a gas, it is distributed under sufficient pressure to keep it in a liquid state. Therefore, distribution of LPG at and below the wholesale level is similar to that of petroleum fuel except that the tanks must be pressurized vessels.

The use of LPG is similar to natural and manufactured gas. Only minor modification of the burning equipment is required for conversion from one to another. Although conversion is feasible, it would be impractical to construct a connection to the distribution system and to install pressurized tanks at the facility.

LPG is used most often in host areas. In many parts of the country, LPG constitutes only a small fraction of the total fuel consumption. However, where LPG is a significant requirement, it must be considered. The operational problems for LPG support resemble those for petroleum. The demand problem resembles that for gas.

The most likely source of information, advice, and assistance for the planning team are the State agency that normally deals with LPG and the LPG industry.

SOLID FUELS

Almost all of the bituminous coal (98 percent of all solid fuels) is consumed in electric power generating and in manufacturing (61 and 37 percent respectively in 1969). Only 4 percent of the total solid fuel production (bituminous and anthracite) is consumed at the retail level or as bunker fuel in ships.

Union disputes have resulted in a number of periodic interruptions in coal production. Both the electric power utilities and the coal (and coke) consuming industries have experience with stoppage of solid fuel supplies. Coal-fired electric power plants usually maintain substantial reserves of coal on hand. Manufacturing plants may not.

Minor users of solid fuels should be considered in the CRP effort, if only to verify that solid fuel distribution to or at the retail level may be shut down in the risk areas. However, whenever the demand for solid fuels--other than for power or manufacturing--in the host areas is significant the plan must reflect this requirement. Planning for solid fuel support would resemble that for distribution of any other solid materials, such as food or general use supplies.

The planning team should seek the assistance of the State agency that deals with solid fuels and of coal industry people in determining the demand for solid fuels during crisis relocation.

ORGANIZING FOR FUEL SUPPORT ACTIVITIES

Support activities for fuel are addressed to four different resources that are related chiefly because they are energy sources. Their distribution systems tend to be independent of each other, especially at the wholesale and retail levels. Management of support in relation to gas, LPG, and solid fuels would be a relatively small task in comparison to food, transportation, and petroleum. Therefore, such resources require a major organizational element for each. These could logically be combined with petroleum into an emergency fuel agency. Whether they should be further combined within that agency or kept separate should follow accepted practice in the State.

8. PLANNING FOR HEALTH SUPPORT

This section of the guidance is addressed to the health of people under crisis relocation from the viewpoint of State-level support activities. Essentially, these activities involve support to localities in providing safe food and water, sanitary living conditions, and medical care. Planning for this support is treated in three commonly defined parts: water supply and sewage disposal, sanitation, and medical services. Reference 12 presents detailed research data on the management of medical problems.

WATER SUPPLY AND SEWAGE DISPOSAL

The availability of a sufficient water supply in host areas will have been determined in making host area assignments. Any limitations on water consumption will have also been defined. The major concern therefore is maintaining the portability of the water supply.

Maintaining portability is routine under normal conditions for any water supply system. The requirement, however, would be intensified in a crisis relocation situation. The increased population will tend to load host area water systems to their capacity. This will require more frequent testing and possibly additional trained personnel and laboratory support.

Sewage disposal may also become a problem in the host area(s). As with the water supply systems, systems for collection and treatment of water-borne sewage will also be loaded to or near capacity under crisis relocation. Moreover, because the effluent from a sewage treatment plant may be the influent to a water treatment plant downstream, it is necessary to assure that the operation of the sewage treatment plant is not causing additional problems for the water treatment plant. This will require additional testing of the sewage plant effluent.

Where sewage is disposed of through septic tanks and cesspools, the effluent passes into the ground water. When tanks and cesspools are loaded to or beyond their capacities, the normal biological process may not be adequate to purify the water within a safe distance. As a result, normally potable water supplies drawn from ground water through wells may become contaminated. This would impose an added requirement for testing.

It can be assumed that, in many instances, the results of tests of the water supply and sewage disposal systems will indicate unacceptable situations calling for corrective actions. Such actions will require technical competence. Normally, such expertise is provided or augmented by the State Board of Health. Under crisis relocation, the need for such technical support would likely be greater than normal. The CRP must provide for assistance by the State either through assignment of its own forces or through placement of qualified local personnel in the areas of greatest need.

In addition to technical staff support, the loading of water and sewage treatment plants to capacity will also increase the normal demand for materials, especially chemicals. In some areas, these chemicals may not be available in wholesale or retail stocks. It may be necessary to transfer these materials from plants whose loading was decreased by the relocation. The State CRP should provide for locating and transferring these supplies.

Supplies of disinfectants (for chlorination) may also be required for small water supplies such as wells that are not normally treated. As discussed above, such small water sources may become contaminated. The CRP should contain provisions for assuring that supplies of such materials are made available, as well as specifying the associated method of treatment.

SANITATION

Because crowding is inherent in crisis relocation, it is crucial that the environment be sanitary, including living quarters and where food is handled, prepared and served. Communicable diseases can rapidly become epidemic in such crowded conditions. From the point of view of the State CRP, sanitation includes: garbage and trash disposal, and vector control.

Garbage and Trash Disposal

Garbage and trash disposal is a two-part problem. First, it is a problem of transportation from origin to point of disposal. Second, it is a problem of disposition when it arrives at the disposition point.

The transportation problem may not be as severe as in the distribution of foods. It is logical to dispose of host area garbage and trash as close to the origin as is practical, rather than haul it back to the risk area dump. It can be assumed that sufficient garbage and trash disposal trucking capability exists in the risk and host areas to serve the needs of their populations. The risk

area disposal organizations--public and private--should be relocated in accordance with the Risk Area Plan to fill the needs of the Host Area Plans. (See CPG 2-8-C)

While transport capability for garbage and trash may be assumed sufficient, arrangements for their disposition in the host areas may create a problem. Where disposition is in a sanitary landfill, additional short-time capacity may require only additional earth moving equipment. Incinerator capacity might be increased by extended hours of operation. However, it might be necessary to establish new disposition points--either temporary or permanent. Although this type of planning is a subject for the Host Area Plan, such matters are often subject to State law or regulation. Therefore, the State CRP should establish policy and provide guidance for host area CRP planners in the matter of disposition of garbage and trash.

Vector Control

Vector control is the attempt to eradicate disease-carrying organisms such as insects and rodents. Prompt removal and sanitary disposal of garbage and trash are major steps in vector control because they eliminate a major source of food. Food for human consumption, however, is also a source of food for vectors wherever it is handled, prepared, and served. Detailed planning for vector control should be addressed in the host area and risk area CRPs.

Vector control materials for use by householders or other non-professionals (chiefly insecticides and rodenticides) are normally handled by the food distribution system and should be continued under crisis relocation situations. But materials for professional insect and rodent control people are distributed apart from food. State activities in support of making these materials available might best be handled together with other health maintenance activities. Planning for vector control materials support would be similar to that for food but, of course, on a much smaller scale.

MEDICAL SERVICES

For the most part doctors and other medical personnel will relocate to host areas along with the people they normally serve. Planning for the services of these professionals and sub-professionals and for the use of host area medical facilities will be addressed in the detail planning for host areas in Phase II.

It can be expected that approximately 25-50 percent of the hospital capacity (beds) in the risk area will remain in operation to

care for those patients too ill to move. This estimate also includes the specialized medical care cases that will occur during the relocation period that will require sophisticated medical facilities not available in the host areas. The determination of which medical facility(s) and the number and type of staff personnel to operate these facilities will be addressed in the detailed local risk area planning in Phase II.

In the context of the statewide CRP, there are three planning elements to be addressed: State medical personnel, State-operated or controlled medical facilities, and support in supply of health supplies and equipment. Comprehensive planning detail is available in Ref. 12, Management of Medical Problems Resulting from Population Relocation.

State Medical Personnel

In a crisis relocation situation, some medical personnel normally assigned to State agencies and institutions would be reassigned in direct support of host area activities. The others would either continue to carry on the duties considered essential or be reassigned to other essential State activities.

State Medical Facilities

Some States operate medical facilities either as separate institutions or as part of other State institutions. First, it must be decided which, if any, will be operated solely for State purposes in the relocation situation and these should be identified in the plan. Next, the State CRP should identify available capacity in State medical facilities in the host areas that could be made available for local needs.

Health Supply Support

Health supplies (Group 1 in Table 4-1) will likely be limited in host areas. These supplies are normally distributed through a system that resembles the food distribution system. Some health supplies of the "home remedy" type are distributed by the food distribution system (e.g., non-narcotic pain killers, laxatives). The distribution of such items through the food distribution system continues in the crisis relocation system. For the health supplies normally distributed at retail through pharmacies and drug stores, the plan should provide for support through the existing supply/distribution system. This planning would be similar to that for food support. (See Section 5)

Planning for health supply support might differ from that for food in that health supply warehouses are not likely to be as large as food warehouses. Therefore, the relocation of wholesale stocks in the crisis relocation movement may be a feasible option. It would be desirable to relocate these stocks to sites at or near the medical centers in the host areas where the doctors who would use these supplies or prescribe their use would be located.

PLANNING ASSISTANCE

The State/Regional planning team should look to the State Department of Public Health for information, advice, and assistance. It may well be that the State Health Department is more deeply involved in the mechanics of providing for maintenance of health and medical care than any other State agency in its cognizant field. Health and medical supply industry is also a source of information, advice, and assistance although it would be better to approach this group through the State health people. If these State and industry people agree to serve as members of the planning team or of an advisory panel, their assistance to the team would be invaluable. Ref. 12 also provides valuable data and planning factors and recommended procedures resulting from an extensive two-year research study.

ORGANIZING FOR HEALTH SUPPORT

The considerations set forth in Section 10 for organizing for direction and control also apply to health support. The health support group should be assigned duties for the activities discussed above which are primarily related to the distribution of supplies and equipment for water and sewage treatment, vector control, and health maintenance and medical care. It seems logical to assign these duties to the State Department of Public Health unless, of course, some other arrangement is necessary for conformity with other State emergency plans.

9. PLANNING FOR ELECTRIC POWER SUPPORT

Electric power generation and distribution is a fixed system in that power is supplied only over fixed lines. However, the system has more flexibility than the gas system. The construction work involved in installing a temporary drop to supply a new location or to allow for a larger load at an existing location is relatively small, can usually be done quickly, and on relatively short notice. The ability of the system to supply such services is limited by the transformer capacity that has been or can be installed.

SYSTEM CAPABILITY

Overall generator capacity will probably be sufficient even when risk areas and host areas are supplied by different companies. The distribution systems of adjoining electric power companies are usually interconnected and they often exchange power. Accordingly, planning for electric power support may extend beyond State boundaries. Whenever this situation exists, the DCPA Region must be advised so that the States affected may be notified.

The amount of power available in any area is not dependent on generator capacity; it is limited by the capacity of the transformers in the system between the user and the generator. Adding local transformer capacity in the form of transformers on power poles may be feasible in a few critical situations, provided the transformers are available.

There is little that could be done to add to the transformer capacities in the main distribution substations. This type of transformer is too large to install quickly and is generally not available except on special order from the manufacturer. Some temporary increase in substation capacity is possible if the power company will lower the voltage or accept a temporary increase in temperature rise in the transformers. Considering the above, it may be concluded that, with some exceptions, the capability of the electric power system to provide service in a crisis relocation will equal its normal capacity.

PLANNING EMERGENCY OPERATIONS

Planning for electric support for a State CRP must inevitably involve the power companies. They maintain information about their systems; they know what changes could be made; and they have experience in dealing with emergencies. The State/Regional planning team

has several ways available for fitting these abilities of the power companies into the planning effort.

The planning team can inform the power companies of the requirement, area by area, and ask whether all or what part of the requirement could be met. Ref. 13 gives the planning factors and a method for estimating power demand. A second approach would be for the planning team to inform the power companies of the areas in which power will be required and ask how much can be supplied. In this case, the planning team would make the supply requirement comparison. Another method would consist of the planning team working together with the power companies. In this case, the planner and the power company would adjust demand against supply for the best achievable match. The option of which approach to follow lies with the power companies. It should also be noted that in some areas (e.g., Rocky Mountain States), electric power does not follow State boundaries and is often beyond the control of State regulation.

If adjustments to the anticipated power supply requirement are necessary, such adjustments are feasible since the controlling factor in supply capability is the instantaneous demand in kilovolt amperes (kva), not the total usage in kilowatt hours (kwh). The objective should be to keep the demand within the system capacity. One way is to specify that equipment whose use is not essential be eliminated (e.g., electric irons). Another way is to conduct operations that are not time-dependent when other demands are low. In considering such adjustments, the team must consider whether they can be implemented. In general, practices that can be promulgated as operating rules of an organization will be adopted because organizations habitually follow rules. Most individuals will adopt limitations only if the limits appear reasonable and the people believe they are necessary.

In any event, the plan for electric power support will be predicated on assumptions as to the uses of electric power. The CRP must make these assumptions explicit. The State agency that normally deals with electric power is the logical first approach for the planning team, if for no more than introduction to the power companies.

Organizing for Electric Power Support

The general considerations discussed in Section 10 for direction and control also apply to electric power support. It seems logical to assign State duties for electric power support to whichever State agency normally deals with it. In the emergency situation, the role of the State would consist primarily of efforts to

control the use of electric power and of allocating to the power companies such controlled resources as were available and needed. The power companies would continue to operate their systems.

10. PLANNING FOR DIRECTION AND CONTROL

Planning for direction and control of the various activities that must be conducted during crisis relocation is especially significant at the State level. Essentially, the direction and control element specifies how the State government will function under crisis relocation conditions. Thus it must address the activities that will be carried on, the overall organization to perform these activities, and the operations the overall organization must perform.

There are three kinds of activities the State government must consider in CRP planning: 1) those emergency activities that arise from, and are necessary for, crisis relocation; (2) those normal activities that will continue through the crisis relocation period; and 3) those normal activities that will be suspended for the duration of the crisis relocation period.

The emergency activities relate to providing direct and resource support to local governments. These activities, as discussed in previous sections, consist of deployment of State forces in direct support; allocation of available supplies of goods and services to essential users; and control of available supplies of goods and services to essential users; and control of available resources through rationing of supplies, direct control on distribution operations, or on using activities. Normal activities that must be continued during the crisis relocation period are those that are a part of or support the emergency activities. It also includes those normal activities whose interruption would cause harm to people or property, or would cause great difficulty in restarting after the return from the relocation. Normal activities to be suspended are defined as all those not included in one of the above.

STATE OPERATIONS IN CRISIS RELOCATION

During a crisis relocation, the State government will perform the following operations:

- Allocate available resources to classes of use or classes of users
- Control use of essential resources through either cooperation of users or direct rationing
- Control the operation of industry by specifying which industrial activities will continue in operation; for distribution industries, what their distribution pattern will be; and for service industries, whom they may serve.

- Conduct normal State operations that must be continued
- Provide direct operational support to local governments
- Collect and supply information
- Analyze information and planning
- Make those decisions under the purview of the State
- Promulgate decisions and review operations

The first four items in the above list are discussed in Sections 5 through 9. The last five items comprise the elements discussed under this section involving direction and control. Normal operations to be continued are not addressed here, as they should be specified by the State.

Direct Operational Support

Direct operational support by the State consists of assigning individuals or units of State forces to assist the localities in conducting crisis relocation operations. In operational support, the State individuals or units may bring with them and use such State-owned organizational equipment and supplies as are available to them. Equipment and supplies are provided exclusive of State operating personnel, and are considered resource support rather than operational support.

Except for State personnel with special skills and abilities, operational support can be supplied only from the State agencies with significant operating capability, such as the State Police, the State Highway Department, the Department of Public Health (for monitoring water supplies), and the State Forest Service (for rural fire fighting).

The significant characteristic of operational support as opposed to State operations is the characterizing element of direction or coordination. If the individual or unit operates under the direction or coordination of a local official, it is operational support. If the individual or unit operates under the direction or coordination of a State official, it is a State operation.

When an individual or a unit of the State forces is assigned to a locality to remain there throughout the relocation period,

this is committed support. Contingent support is when the individual or unit is held in reserve and dispatched when the need arises and only as long as needed.

Committed support cannot be planned completely until the needs of the host areas are expressed in the Requirements Statement of the Host Area Plans. Therefore, in the initial State CRP, all of its forces are considered available for contingent support except for such units as, say, district forces of the State Highway Department located in the host areas which might logically be assigned to that area.

The implication of committed versus contingent support applies in relocation planning for State forces. Committed forces would move to and report to the host area group with whom they will work. Contingent forces would move to and report to the assigned relocation headquarters for their units in the host areas. Although planning for these relocations is a matter for Phase II, the State CRP needs to identify the units or individuals involved.

Direction and Control Operations

Under a crisis relocation situation, the State would perform direction and control *operations* in the following sequential steps.

1. Information is gathered and assembled
2. Information is analyzed and problems identified
3. Alternative solutions for the problems are devised
4. Preferred solutions are selected
5. Decisions are promulgated
6. Results are reviewed

Conversely, *planning* for direction and control proceeds in the reverse order of the sequence of operations. That is, planning starts with descriptions of an operation to be controlled in terms of allocation, rationing, etc. The first planning decision is the identification of those to whom a decision is to be promulgated (Step 5). The planning decision for Step 4 is the selection of what can be decided in relation to the operation to be controlled. (Some obviously desirable decisions may be inappropriate due to legal prohibitions, inability to enforce, etc.) The planning decisions for Steps 2 and 3 involve what alternatives can be devised given the possible or potential problems. The planning decision for

Step 2 is the identification of what the analysis must produce in order to permit identification of the problems. Finally, the planning decision for Step 1 is the identification of the information required to permit the type of analysis necessary.

Direction and control operations are devised to implement these planning decisions. For all except Step 1, the operations are described in terms of what is to be done and under what circumstances it is to be done. For collecting and assembling information, the operation design must identify information required and specify its content, form, source, destination, and timing.

ORGANIZING FOR CRISIS RELOCATION OPERATIONS

In defining the organization which will conduct State operations, the planning team must be guided by specified organization in existing emergency operations plans. Recognizing that the nature of emergencies may differ, substantial benefits can be obtained if a State has emergency organization to serve in any emergency. Some changes may be required to reflect unique needs of different types of emergencies. (Ref. 14 provides a discussion of organizing for crisis relocation.)

Even under these limitations, the planning team must produce an organization plan for direction and control. This plan must specify what the major elements of the organization are to be, what positions are to be in each for crisis relocation operations and the duties and authority of each, and what the chain of authority and channel of communication are among them. The organization plan need not specify duties for those State positions that do not change under crisis relocation.

ORGANIZING FOR DIRECT SUPPORT

In organizing for direct operational support, it is desirable that the State government have a major element of its organization for each of the following directly-supported services:

- Law and Order Service
- Fire and Rescue Service
- Health and Medical Service
- Reception and Care Service
- Resource and Supply Service

These organizations would be concerned with the dispatch of whatever State forces are available to wherever local forces need support. Related duties, for example, would include comparing competing needs and, if given the authority, deciding relative priorities.

ORGANIZING FOR RESOURCE SUPPORT

In organizing for resource support, it seems desirable to establish one major element for each of the resources or class of resources. This would be desirable since it makes maximum use of the existing State organizations. It should be recognized that more than one existing agency may be assigned to the same resource support element.

The existing Emergency Resource Management Plan (ERMP) for the State should be reviewed as source material and to ensure compatibility between the CRP and the ERMP. While many, if not most, of the ERMP's are out of date they still contain useful information which can be updated for the CRP rather than starting from scratch.

The alternative would have two major elements--Allocation and Control, and Industry Operations. Each of these two elements would have a subordinate element for each resource or class of resources. This alternative tends to be more complex in that it would require more extensive lines of communication and would involve dividing some State agencies between the two major elements.

Essentially, the State organization for resource support should include the following:

- Food
- General Supply
- Transportation
- Fuel
- Health
- Electric Power
- Telecommunications

The planning team should consider whether a coordinating element needs to be imposed on those elements. That would depend largely on the decision authority delegated to the heads of the major elements both for direct and for resource support.

If the head of each of the five direct support elements and the seven support elements is given full authority to make whatever decisions are required in his assigned field, the resulting 12 positions reporting to the chief executive are not excessive. If decision authority is retained, 12 would likely be too many and a Coordinating Resource Support element would need to be imposed over the seven individual resource support elements.

In any organization, decision authority should be delegated as far down the chain of command as capabilities permit. This will shorten the time between when the need for decision is perceived and when the decision is made. In an emergency organization, the need to shorten this delay is even more important because time will be critical.

ORGANIZING FOR DIRECTION AND CONTROL

The following discussion relates to organizing for direction and control at the chief executive level. It is also applicable to each of the major elements of the State crisis relocation organization.

The operations to be performed in direction and control can be divided into four basic groups.

- Information gathering and assembly
- Information analysis, problem identification, and devising alternative solutions
- Selecting preferred solutions (deciding) and reviewing results
- Promulgating decisions

The authority to decide and to review is explicitly or implicitly delegated to the chief executive by the State constitution or statute. He must retain those authorities that apply to the activities subject to his direct control. He also has authority to conduct the other activities, but since this would require inordinate time, he will probably need assistance. To supply this assistance, common organizing practice is to set up a staff under a chief of staff. In this case, such a staff would probably have three functional elements, as defined below.

- Information: To gather and assemble information.
- Planning: To analyze information, identify problems, and devise alternative solutions.
- Operations: To prepare the necessary instructions, directives, and operational orders required to promulgate the decisions made by the chief executive.

In addition to conducting emergency operations, the State is responsible for informing its citizens of the situation, what is being done, and what needs to be done by the citizen. Especially in crisis relocation, it is necessary for the State government to communicate with the public through a single authority; that is, the chief executive. In addition, what is announced by the host area governments must be consistent with what is said at the State level.

Therefore, there should be a public information element in the State direction and control element to assist the chief executive in informing the public and in guiding local government in its public information activities. (This requirement does not apply to the other elements of the State organization.) The public information element may, or may not, also report to the chief of staff.

The head of each major element should be assigned the duty of providing technical assistance to the chief executive and to the other major elements either in person or through a representative, thus eliminating the need for a special staff. In addition, direction and control should have a group to provide such administrative services as communications, supply and housekeeping.

DEPLOYMENT OF THE ORGANIZATION

Should the State capitol to be in a risk area, the State government should consider relocating to a site(s) in the host areas. Those State agencies that are assigned to the emergency organization will need to move to the host areas, together with their families and such organizational equipment and supplies as they will need and can move. Therefore, the planning team, in developing the organization plan, must also identify the places at which the several elements of the organization will operate.

Relocation sites for State agencies will, in most States, be designated in existing emergency operations plans. The planning team should review these designations to find whether they are appropriate for the crisis relocation organization.

It may be desirable to relocate by organization even those State agencies (or part thereof) that do not have an assignment in the crisis relocation organization. Providing living space is the responsibility of the host government, but the State agency must advise the host of its needs. Figure 10-1 shows the form to be used in compiling and transmitting this information. The State agency need only enter the data under the headings, "Organization" and "Relocation Headquarters" and the name of the county under "Host Jurisdiction".

Another option for consideration is to continue selected State government functions as an "essential" industry with key workers commuting to the risk area to continue their essential tasks.

page _____	
ORGANIZATION	HOST JURISDICTION
Name <u>Colorado Food Agency</u>	County <u>Garfield</u>
Address <u>300 Logan Street</u>	Area _____
<u>Denver, CO 80203</u>	Lodging District _____
Phone (303) <u>733-4658</u>	Lodging District Office _____
Official <u>Robert O. Mikebuy</u>	
No. Employees <u>72</u> No. Dependents <u>182</u>	Building _____
H _____ C _____ O _____	Address _____
TOTAL EVACUEES <u>254</u>	Phone () _____
RELOCATION HEADQUARTERS	COMMENTS
Building <u>Rocky Mountain Bank</u>	_____
Address <u>38 East Main Street</u>	_____
_____	_____
Phone (303) <u>364-5112</u> Bldg. No. _____	_____
CONGREGATE LODGING	
Building _____	Building _____
Address _____	Address _____
_____	_____
Phone () _____ Bldg. No. _____	Phone () _____ Bldg. No. _____
Capacity _____ NO. ASSIGNED _____	Capacity _____ NO. ASSIGNED _____
FALLOUT SHELTER	
Building _____	Building _____
Address _____	Address _____
_____	_____
Phone () _____ Bldg. No. _____	Phone () _____ Bldg. No. _____
Spaces _____ Vent _____ Pump _____	Spaces _____ Vent _____ Pump _____
NO. ASSIGNED _____	NO. ASSIGNED _____
CONGREGATE FEEDING	
Building _____	Building _____
Address _____	Address _____
_____	_____
Phone () _____ Bldg. No. _____	Phone () _____ Bldg. No. _____
NO. ASSIGNED _____	NO. ASSIGNED _____

Figure 10-1 SAMPLE ORGANIZATIONAL ASSIGNMENT SHEET

THE ORGANIZATION PLAN

Each part of the supporting documentation (Annex) for the State plan should contain an organization plan. This organization plan should contain the following:

- Statement of the functions to be performed by the organizational element involved
- Identification of the elements of the part of the organization involved
- Brief descriptions of the duties of the positions directly involved in crisis relocation operations and their direction and control
- Assignments of authority to make decisions; i.e., specific decisions by specific positions
- Identification of the lines of authority and channels of communication
- Designation of the crisis relocation operating site

Where appropriate the organization plan must account for the State agencies that will continue to function even though not involved in crisis relocation activities.

THE OPERATIONS PLAN

Each supporting document (Annex) for the State plan should also contain an operations plan including the following:

- Brief descriptions of the crisis relocation operations to be performed and, for each, the circumstances under which it will be performed plus brief descriptions of the normal operations to be continued although not related to crisis relocation.
- A staffing plan that will include assignments of State agencies or parts of agencies to elements of the emergency organization and of individuals to positions and lines of succession. The staffing plan should also identify the State agencies, or parts of agencies, that will continue to operate and the agencies or parts of agencies that will not.

- An information plan specifying items of information, their content and form, source and destination, and timing.

Particular attention should be given to those operations that must be performed just before (in preparation) and just after (execution) the decision to relocate is promulgated. This should result in a checklist for such operations.

Planning Team Assistance

In planning for direction and control, the NCP planning team will be dealing with matters in which the State government staff will have a personal interest. The team should not attempt to produce this part of the plan without consultation with the various agencies, seeking their advice and guidance. In this area, it will be particularly important to attempt to have State agency personnel assigned as members of the team or as members of an advisory panel.

11. PLANNING FOR TELECOMMUNICATION SUPPORT

The need for coordinated, rapid action inherent in a crisis relocation situation makes planning for telecommunication support crucial. While primary reliance will be placed on electronic telecommunications during a crisis, other forms of communications (e.g., messenger services) may be used for low priority needs or should electronic communications fail or become overloaded. Postal service is not expected to be in full operation, if at all.

Communications studies have revealed that extensive communications nets and equipment designed to meet day-to-day needs of government, industry, and the public are in existence. It is necessary to develop plans for the effective use of these existing communications resources in an emergency. Planning should include actions to interconnect existing systems and to provide a central point of control for the integrated network.

COMMUNICATION NEEDS

Three kinds of communication must be considered in planning telecommunications support. The first is for the transmission of information within government: within the State organization, between the State and local governments, and among local governments. The second is for the transmission of information within and among the industrial activities that will continue to operate and between them and the State and local governments. The third is for informing the public both by the State and by local governments. (Ref. 14)

Intergovernment Communications

Communications are required in any organization so that information about the situation or about problems can be passed up and so that information about decisions and directives can be passed down. Information must also be passed laterally among those at the same level in various agencies who must cooperate or whose activities must be correlated.

During a crisis relocation period, the State organization would be dispersed. The overall direction and control would likely function in the State EOC. The major support elements would function at sites at some distance from the EOC and from each other. The need for coordination would require communications between the EOC and each of the major support elements as well as between some pairs of the major support elements.

Communications will be required between each local government and the State government. Local governments will provide information about the situation and support requirements and the State will provide information about policy and about actions necessary to supply support. If the delegation of authority to the major support elements of the State organization is consistent with the crisis nature of the relocation, local governments will need communications to the major State elements as well as to the State EOC.

Adjoining host area jurisdictions will need to correlate their activities to reduce confusion in the minds of the people. Mutual aid between adjoining governments may often provide the preferred solution for a problem. However, the need for communications between a local government and one that does not adjoin would be minimal. Consistency is not needed when one jurisdiction is separate from another. Support between separated local governments is best managed by the State.

Industry Communications

Maximum reliance will be placed on private industry to distribute the goods and services required during the relocation period. Industrial activities must be able to pass the necessary operational information both intracompany and intercompany. Significantly, there must be communication between industry and government. Industry needs to inform government as to its situation and its problems. Government must inform industry as to the general situation and as to government actions for control of resources.

Public Information

Information about the emergency must be transmitted to the public for two major reasons. First, the public needs to be advised of the situation and of what they should do so they can best withstand its effects. Second, they need to be informed as to what is being done to assure them and motivate them to do what is expected. The information given to the people must be as complete and accurate as possible. It must be believable and reasonable. To be believable, it must come from a reliable source to instill confidence. It must be internally consistent. Conflicting information will lead to confusion, and possibly, to independent action inappropriate to the situation.

Most of the information given the public will be produced locally; that is, it will be issued locally by, or in the name of, the chief executive of the local government. The major communication medium will most likely be radio and possibly television. While local public information can be handled independently by individual radio and television stations, it would be desirable for the Governor to speak directly to the public. Therefore, the capability to use a State-wide network should be available to him.

TELECOMMUNICATIONS SUPPORT PLANNING

The importance of attaining the highest possible state of readiness to conduct emergency operations cannot be overemphasized. A thorough and continuing communications planning effort, which has as its principal objective the most effective emergency use of all communications resources, is essential to the achievement of an acceptable state of readiness. State and local governments must provide for emergency communications planning as an integral part of CRP. Emergency communications planning and programming should include:

- Developing essential communications inventories, plans, and procedures--and keeping them current
- Coordinating plans and operating procedures with appropriate neighboring governments, and other levels of government
- Training and assignment of personnel for the operation and maintenance of emergency communications
- Test and exercise emergency communications systems and procedures to ensure operational readiness

To be meaningful, planning should involve the active participation of all agencies of government that have emergency assignments.

Consequently, the communications support requirements for crisis relocation can be derived in an analysis of the operation of government and industry operations and of planned public information activities. In the case of the State government, this can be an identification of the nodes and links of the required system. For local governments, it cannot be much more than an identification of areas in which service would be required. For industry, some major activities might be identified, but similarly, it might not be much more than an identification of areas requiring service. For public information, most of the requirement will be in the host areas, but some requirement in the risk areas may remain. Ref. 14 discusses methods for identifying telecommunications requirements.

In the initial Statewide planning phase, a major resource for assistance is the telecommunications industry. The telephone companies, especially, have had considerable experience in operating in emergencies and have a method of "line load control" for assuring that available capacity is used for essential purposes.

In planning the telecommunications support operation, an element of the State organization should be established to assist the telecommunications industry in supplying the needed service and to advise as to the situation, changes in requirements, and changes in priorities.

Specifically, the following steps should be considered in developing the telecommunication support annex.

- Determine Emergency Communications Requirements. Key personnel in agencies of government that have emergency assignments should be involved in determining which emergency elements need to communicate between which points, and for what purposes. The basic sources of information for determining emergency communications requirements are the emergency functional assignments indicated in the Operations Plan.
- Inventory Existing Communications Resources. This should include public radio, television, telephone companies, and other wire facilities. The inventory should also provide precise information regarding characteristics, capabilities, limitations, and availability to meet emergency operational requirements.
- Match Available Communications Inventory with Requirements. By correlating inventory data with the requirements data, available communications resources may be utilized to the maximum extent. This analysis will also identify shortages and overages of systems, equipment, and facilities.

12. EMERGENCY PUBLIC INFORMATION

The completion of the allocation planning in this Part of the guidance forms the basis for preparing standby emergency instructions to the general public and to a lesser extent the employees of essential industries/services. Although the instructions for some groups can be quite specific, many details that will be supplied in later planning will be missing. For this reason, emergency public information materials prepared at this stage will not be as complete or as credible to their intended recipients as they could ultimately become. There are, however, two reasons why the basic tools for informing the citizenry should be developed at this stage of planning.

First, the essential elements of information on "where to go and what to do" are available, at least with respect to the population of the risk area and its immediate environs. Information generated by further planning can be more readily included to make the emergency instructions more specific and effective if the basic materials are in existence.

Second, the nuclear crisis situation in which relocation instructions could become salient is likely to cause accelerated local planning on incomplete or outdated elements of the relocation plans. Whatever information materials exist at the time are likely to undergo a rapid evolution under these circumstances. That is, the operational plans that are the subject of subsequent parts of this guidance have been planned for peacetime development in an orderly manner with Federal assistance. Were this the only prospect, the preparation of emergency public information could await, perhaps, the completion of the entire process. The value of preparing emergency guidance to the public upon completion of the allocation process is not because it may be all that is available should a crisis arise prematurely but rather that it will provide the vehicle for rapid improvement during the earlier stages of the crisis. In this respect, camera-ready copy or broadcast announcements should be regarded as perishable products always subject to revision and updating.

Relationship to Public Information

The emergency instructions or guidance that are the subject of this section are those materials that would be disseminated by the mass media and through organization supervisory channels at or very near the time that crisis relocation is directed. Clearly, total reliance on such materials to motivate a high degree of cooperation and compliance on the part of the public would be foolhardy. Much groundwork should have been laid earlier in the crisis and in peacetime so that recipients of the instructions are not confronted by a

totally new undigested idea. At the same time, laying the groundwork involves a somewhat novel problem for government. The problem is implicit in contingency plans in general but has special aspects with respect to crisis relocation.

One of our civil defense contingency plans is based on in-place protection of the population. The instructions connected with this plan are basically simple--seek shelter when the Attack Warning sounds. Since a war "out of the blue" is highly unlikely, there will generally be time to elaborate on where the shelters are and what to bring when the public and local authorities are made more attentive by a crisis. All this information is available in most localities right now for those who are interested. These preparations are good and must be continued, since we may one day have to make use of the in-place plan if crisis events move rapidly or if the President never finds relocation compatible with his attempts to ameliorate the crisis.

Thus, as crisis relocation planning progresses, the option of crisis relocation must be presented both in peacetime and during a crisis as one that may be invoked in certain localities but only if the President so decides. This information is, of course, of primary interest to those risk areas for which the option is planned and the host areas that would be involved in reception and care. But, in many parts of the country, this is likely to include most everyone. Many people find it difficult to think about contingencies and alternate plans, especially when one of the alternatives is not a matter of personal or even local choice, but a matter of grave national decision. Thus, the communication of civil defense information becomes more complex and a matter to be handled both candidly and with great care. In particular, any attempts to down-play the possibility of crisis relocation or withhold information "until later" will jeopardize the laying of the groundwork without which emergency relocation instructions will be much less credible and persuasive to the citizenry.

The full scope of public information on civil defense is a matter to be taken up in connection with the preparation of host area and risk area operational plans in succeeding parts of this guidance. But civil defense organizations and plans exist today and public information is an ongoing activity. Thus, the relationship of the emergency public information discussed in this section to the larger framework of information activities should be understood at the outset. The emergency relocation instructions discussed here are to be disseminated by all means available once a decision to relocate risk-area populations has been reached or possibly when a decision to prepare for imminent relocation has been made. Prior information activities must prepare the population to be receptive to these instructions, even though the messages must be couched in terms of possible Presidential action and not as a substitute for readiness to seek appropriate nearby shelter, should attack warning occur.

Redundancy and Reinforcement

The bare bones of emergency relocation instructions consist of information on "where to go and what to do". This information will make sense to the recipients and motivate them to comply only if it is compatible with their other personal concerns. The conditions of the crisis, as reported on TV and radio and in the newspapers, is a positive factor leading toward responsiveness. Knowledge conveyed before and with the instructions that preparations had been made to provide housing, food, and other necessities at the relocation site would contribute to meeting an obvious personal concern. Knowledge that police and fire personnel were being positioned to protect the homes and possessions of those that leave would contribute to the alleviation of another concern. To the extent that the organizational arrangements accomplished during the on-site portion of allocation planning justify information of this kind, it will constitute an important part of the emergency information content.

There are three key audiences in the risk area for which emergency relocation instructions are required. These are (1) the government agencies, private businesses, and institutions that have been designated essential industries/services that will remain in operation during the relocation period, (2) persons requiring transportation among the general public, and (3) the remaining general public. The first group should get their instructions and supporting information through the organization with which they are connected. It is important to draft the content of these instructions to the extent that they can be based on the allocation results, recognizing that the specific information is likely to be rapidly upgraded during the crisis. The vehicle for these instructions should be the normal form of communications within the organization--most often a memorandum instruction from management to employees and, in appropriate cases, to an institutionalized group. Laying the groundwork is important in the organizational context as well as with the public. Thus, an initial announcement that certain arrangements have been made for use in a remote contingency might be issued at any time following the allocation. Follow-up messages as later planning progresses would be useful.

The general public, including those without private transportation, will receive their relocation instructions mainly through the mass media, as discussed below. However, the preliminary announcements and instructions to members of organizations will play an important role in reinforcing the credibility of public announcements. Employees of the organizations cited above and their families are a substantial constituent of the local population, available to participate in interpersonal discussions with friends and neighbors. To the extent they have been informed of their potential role and of more general plans and instructions, they will constitute a redundant and reinforcing path for information important to the general public. Conversely, the emergency information intended for the general public should recognize the organi-

zational elements and reinforce the information provided to that audience.

Emergency Information for the Public

Emergency instructions to the general public on where to relocate and what to take, together with supporting information on what to expect in the way of arrangements for care, protection of property and the like, should be prepared for delivery in a variety of ways. It can be assumed that a decision for relocation during a nuclear crisis would be a news story of major proportions. Radio, TV, and newspaper reporters would lead the demand for information and would aid in relaying instructions as well. Preparations must be made, and intensified in a crisis buildup, to satisfy this demand while attempting to minimize the amount of conflicting information conveyed.

Experience has shown that the public has difficulty in understanding and retaining information and instructions gained from radio or TV. Printed instructions are the most reliable means of informing an individual of where he is to go in the host area based on where he lives in the risk area. Thus, a newspaper supplement or its equivalent will be necessary as the basic communication, with information passed through other media to be regarded as of a redundant, reinforcing character. A map of the risk area, partitioned into neighborhoods or areas each associated with a particular route and host destination, is the most common form of communicating the basic information. This is not the ideal form, as many people have difficulty reading a map. One alternative that may be feasible is to associate the "where to go" instruction with the first three numbers or prefix of the telephone number. This alternative works in those urbanized areas where the telephone centers service rather definite geographical areas of the city and its environs. This is often not the case, however. Discussion with the local telephone company should quickly establish feasibility. If the telephone company can establish the approximate geographical bounds of service associated with one or several prefixes, covering the risk area, these can be overlayed on the tract map and the remaining general public reallocated from telephone areas to appropriate host jurisdictions. Examples of several approaches are contained in GPG 2-8-F (Preparing Crisis Relocation Planning Emergency Public Information).

The text material provided in the examples must be adapted to the local allocation results, with care taken to reflect the status of planning as it is. Where additional information from later planning would be useful, it should be indicated so that it can be introduced at the proper time. This will help in keeping pace with accelerated planning in a crisis as well. The text material has been confined to the instructions and reinforcing information that would be needed by the general

public in the risk area in order to relocate as planned. General information of use in event of nuclear attack or details for use once relocation is completed are not included on the basis that these are best provided in the host areas. Information of this sort is included in the guidance for operations planning in host areas. (CPG 2-8-C)

Materials prepared for the broadcast media should be based on the standby printed material and should reinforce it and amplify particular aspects of the information presented. It is not necessary or even desirable to ghost-write scripts of material to be broadcast. Rather, source materials to amplify the printed text should be assembled for possible use. Since the printed information, even when developed with care and revised in the course of later planning or in a crisis, may not anticipate some, or even most, of the questions that will arise in the public mind, it is best to regard the broadcast media as primarily the vehicle for surfacing these questions and for responding to them as they arise.

Emergency Information for Essential Organizations

The specific information for members of these organizations must be drawn from the organization assignment forms and from the operational considerations that led to the relocation assignments. The supporting information, it will be noted, is similar to that intended to be provided to the general public. Indeed, in adapting the example material to the local situation, care should be taken to assure that the information suggested for the organizational channels is completely consistent with that intended for the general public.

The final product of emergency information for organizations at the allocation stage should be determined in consultation with the local civil preparedness coordinator and in light of available manpower. At a minimum, a "fill-in-the-blanks" set of instructions appropriate to each class of organization should be developed. These sets of draft instructions could be left with the local civil defense staff for later dissemination to the organizations having relocation assignments, or better, provided at once to each organization as an addition to the organization assignment forms and questionnaires that represent the rudiments of the organization's relocation plan. At the other extreme, a set of emergency instructions could be prepared for each organization in consultation with it and placed on the organization's letterhead ready for production when needed.

Post-Relocation Information Needs

It was emphasized at the beginning of this section that the emergency relocation instructions that are the main topic and output of the section are but one element in a continuum of information that needs to start long before the instructions are issued if they are to be effective. The need for emergency information also continues on into the relocation period as well. The precise nature of this information cannot be determined in advance but some planning can be done to assure that the need is recognized and means are available to respond to the need at the time.

It was noted earlier that, regardless of the effectiveness of emergency public information and other arrangements, some unknown number of risk-area residents will refuse to relocate. Information must be aimed at these "stay-puts", primarily by radio broadcast. To satisfy this need at least one radio station should be included in the list of essential facilities to be kept in operation to serve the risk area. Stay-puts need to be encouraged to leave the area after the main exodus and offered assistance to do so. They need to be advised of the location of the staging areas and that medical aid, food, and other necessities are available there. (Note that pre-relocation information examples associate the staging areas with support of the essential risk-area activities and do not specifically acknowledge that stay-puts will exist). Stay-puts also need to be advised of curfew and other control regulations and warned not to engage in criminal activity. Ultimately, they may need to be warned to seek shelter from attack.

Another predictable post-relocation information need stems from the relocated population's continuing concern for their abandoned homes and possessions. Broadcast stations in the host areas may be used to satisfy part of this need. It has also been suggested that law enforcement officers and others in positions of responsibility in the host area should be ready to reassure the relocated families that their possessions are being protected. It is likely, however, that a more familiar and independent source of information will be more effective in dampening concern and attempts at premature return to the city. This can be accomplished by allowing mass media reporters access to the risk area and assisting in the distribution of their findings. It is recommended that at least one risk-area newspaper be included in the list of essential facilities to be maintained in operation, its daily edition to be distributed to the relocatees in the host area. Video camera teams might also be included in later planning.

PRELIMINARY INFORMATION NEEDS

It should be noted that should the need arise for Emergency Public Information (EPI) materials to implement CRP prior to the development of the detailed host and risk area plans, it is possible to utilize materials already developed under State-level planning as a rudimentary EPI packet. For example, the basic State CRP will identify the risk areas within the State along with host areas which have been keyed to the risk locations. A map depicting these conglomerates along with appropriate Statements by the Governor concerning CRP could be utilized as a "first-cut" preliminary EPI packet until it can be refined during subsequent CRP plan development.

APPENDIX A

DERIVATION OF RISK AREA DATA

This appendix explains how the initial computer printout ("Disposition of Input Population with Blast and Fallout") was derived for the states and how it relates to the weapon-effects "blobs" developed for TR-82. Figure A-1 is a reproduction of a page of the Colorado printout used as an example in the discussion below.

First, the "blob" shown on the various state maps in TR-82 represents the area within which there is a 50-50 chance of experiencing at least 2 psi blast overpressure of the weapon(s) assigned to the targets were actually delivered. The boundary, therefore, is the locus of the 50 percent probability of experiencing exactly 2 psi from air bursts intended to maximize the size of the "blob".

The planner should review CPG 2-1A2, Chapter 2 of the CDPA Attack Environment Manual, What the Planner Needs to Know About Blast and Shock, on the consequences to people in the region of 2 psi blast overpressure and the protection possibilities in this area. It will become evident that choosing a portion of the risk-area boundary a bit inside the "blob" boundary rather than outside is not a gross error since taking available shelter in the 2 psi region is a protective action that compares well with the alternative of undergoing the dislocations of evacuation.

The second point is that the computer was instructed to regard all residents of the "urbanized area" of the SMSA as being within the risk area, whether or not the weapons-effect "blob" includes the entire urbanized area. The urbanized area is the central city (or twin cities) of the SMSA and surrounding closely settled territory. It might be regarded as the "physical" city as opposed to the political" city. Areas having a population density of over 1,000 persons per square mile generally form the urbanized area boundary.

Figure A-2 shows the urbanized area of Colorado Springs as defined in PC (1)-A. This is a Bureau of the Census publication that provides population data from the 1970 census for counties and county subdivisions as well as maps of the urbanized areas within the State and maps of the county subdivisions used in the census. These subdivisions are called minor civil divisions (MCD) and places, except in the western part of the county where "census county divisions" have been drawn to replace and be equivalent to MCDs. Colorado is one such State. In metropolitan areas, the MCDs outside the buildup area are also census tracts.

COUNTY AUTAUGA	001 IN ALABAMA	T-U-R-UA POPN = 24460	13116	11346	0 F.O. DOSE =	2037 LEVEL 1
MCD NO. 1 11CD=020 PRATTVILLE DIV	T-U-N P = 17434	0 17434 CL N 140 UAC 8240 PSI	2,050 UBLR 18BLR 0			
RISK REDUCED COUNTY RECEPTION CENTER POPN = RURAL =	7026					
COUNTY BALDWIN	003 IN ALABAMA	T-U-R-UA POPN = 59282	15813	43467	0 F.O. DOSE =	2021 LEVEL 1
MCD NO. 1 11CD=010 DAPHNE DIV	T-U-N P = 8461	0 8461 CL N 139 UAC 5160 PSI	1,670 UBLR 18BLR 0			
RISK REDUCED COUNTY RECEPTION CENTER POPN = RURAL =	43507 URBAN = 15813					
COUNTY BARBOUR	005 IN ALABAMA	T-U-R-UA POPN = 22543	9102	13441	0 F.O. DOSE =	1434 LEVEL 1
MCD NO. 1 11CD=010 DAPHNE DIV	T-U-N P = 22543	0 22543 CL N 139 UAC 5160 PSI	1,670 UBLR 18BLR 0			
RISK REDUCED COUNTY RECEPTION CENTER POPN = RURAL =	43507 URBAN = 15813					
COUNTY BISS	007 IN ALABAMA	T-U-R-UA POPN = 13012	0	13012	0 F.O. DOSE =	1227 LEVEL 1
MCD NO. 1 11CD=010 DAPHNE DIV	T-U-N P = 13012	0 13012 CL N 139 UAC 5160 PSI	1,670 UBLR 18BLR 0			
RISK REDUCED COUNTY RECEPTION CENTER POPN = RURAL =	43507 URBAN = 15813					
COUNTY BLOUNT	009 IN ALABAMA	T-U-R-UA POPN = 24853	4340	20513	0 F.O. DOSE =	2241 LEVEL 1
MCD NO. 1 11CD=010 BROOKSVILLE DIV	T-U-N P = 3071	0 3071 CL N 138 UAC 3440 PSI	1,200 UBLR 18BLR 0			
RISK REDUCED COUNTY RECEPTION CENTER POPN = RURAL =	22463 URBAN = 4390					
COUNTY BULLOCK	011 IN ALABAMA	T-U-R-UA POPN = 11829	4325	7504	0 F.O. DOSE =	1784 LEVEL 1
MCD NO. 1 11CD=010 BROOKSVILLE DIV	T-U-N P = 11829	0 11829 CL N 138 UAC 3440 PSI	1,200 UBLR 18BLR 0			
RISK REDUCED COUNTY RECEPTION CENTER POPN = RURAL =	22463 URBAN = 4390					
COUNTY BUTLER	013 IN ALABAMA	T-U-R-UA POPN = 22007	8033	13974	0 F.O. DOSE =	1606 LEVEL 1
MCD NO. 1 11CD=010 BROOKSVILLE DIV	T-U-N P = 22007	0 22007 CL N 138 UAC 3440 PSI	1,200 UBLR 18BLR 0			
RISK REDUCED COUNTY RECEPTION CENTER POPN = RURAL =	22463 URBAN = 4390					
COUNTY CALHOUN	015 IN ALABAMA	T-U-R-UA POPN = 103092	66130	36962	0 F.O. DOSE =	3203 LEVEL 1
MCD NO. 1 11CD=005 ANNISTON DIV	T-U-N P = 31637	0 31637 CL N 134 UAC 80 PSI	2,790 UBLR 18BLR 2			
MCD NO. 1 11CD=020 DITCHER DIV	T-U-N P = 2021	0 2021 CL N 134 UAC 80 PSI	1,730 UBLR 18BLR 1			
MCD NO. 1 11CD=025 OXFORD DIV	T-U-N P = 11264	0 11264 CL N 134 UAC 80 PSI	1,090 UBLR 18BLR 1			
MCD NO. 1 11CD=035 WEAVER DIV	T-U-N P = 18204	0 18204 CL N 134 UAC 80 PSI	1,580 UBLR 18BLR 1			
RISK REDUCED COUNTY RECEPTION CENTER POPN = RURAL =	34943 URBAN = 21350	0 12953 CL N 134 UAC 80 PSI	9,180 UBLR 18BLR 2			
COUNTY CHAMBERS	017 IN ALABAMA	T-U-R-UA POPN = 26336	15852	20544	0 F.O. DOSE =	1778 LEVEL 1
MCD NO. 1 11CD=025 OXFORD DIV	T-U-N P = 26336	0 26336 CL N 134 UAC 80 PSI	2,790 UBLR 18BLR 2			
RISK REDUCED COUNTY RECEPTION CENTER POPN = RURAL =	34943 URBAN = 21350					
COUNTY CHEROKEE	019 IN ALABAMA	T-U-R-UA POPN = 13606	0	13606	0 F.O. DOSE =	3501 LEVEL 1
MCD NO. 1 11CD=025 OXFORD DIV	T-U-N P = 13606	0 13606 CL N 134 UAC 80 PSI	2,790 UBLR 18BLR 2			
RISK REDUCED COUNTY RECEPTION CENTER POPN = RURAL =	34943 URBAN = 21350					
COUNTY CHILTON	021 IN ALABAMA	T-U-R-UA POPN = 22100	8868	13232	0 F.O. DOSE =	1328 LEVEL 1
MCD NO. 1 11CD=025 MINERAL SPRINGS DIV	T-U-N P = 1439	0 1439 CL N 141 UAC 80 PSI	1,180 UBLR 18BLR 1			
RISK REDUCED COUNTY RECEPTION CENTER POPN = RURAL =	19312 URBAN = 3868					
COUNTY CHOCTAW	023 IN ALABAMA	T-U-R-UA POPN = 16327	0	16327	0 F.O. DOSE =	1662 LEVEL 1
MCD NO. 1 11CD=025 MINERAL SPRINGS DIV	T-U-N P = 16327	0 16327 CL N 141 UAC 80 PSI	1,180 UBLR 18BLR 1			
RISK REDUCED COUNTY RECEPTION CENTER POPN = RURAL =	19312 URBAN = 3868					

Figure A-1. Sample Page of Initial Computer Printout

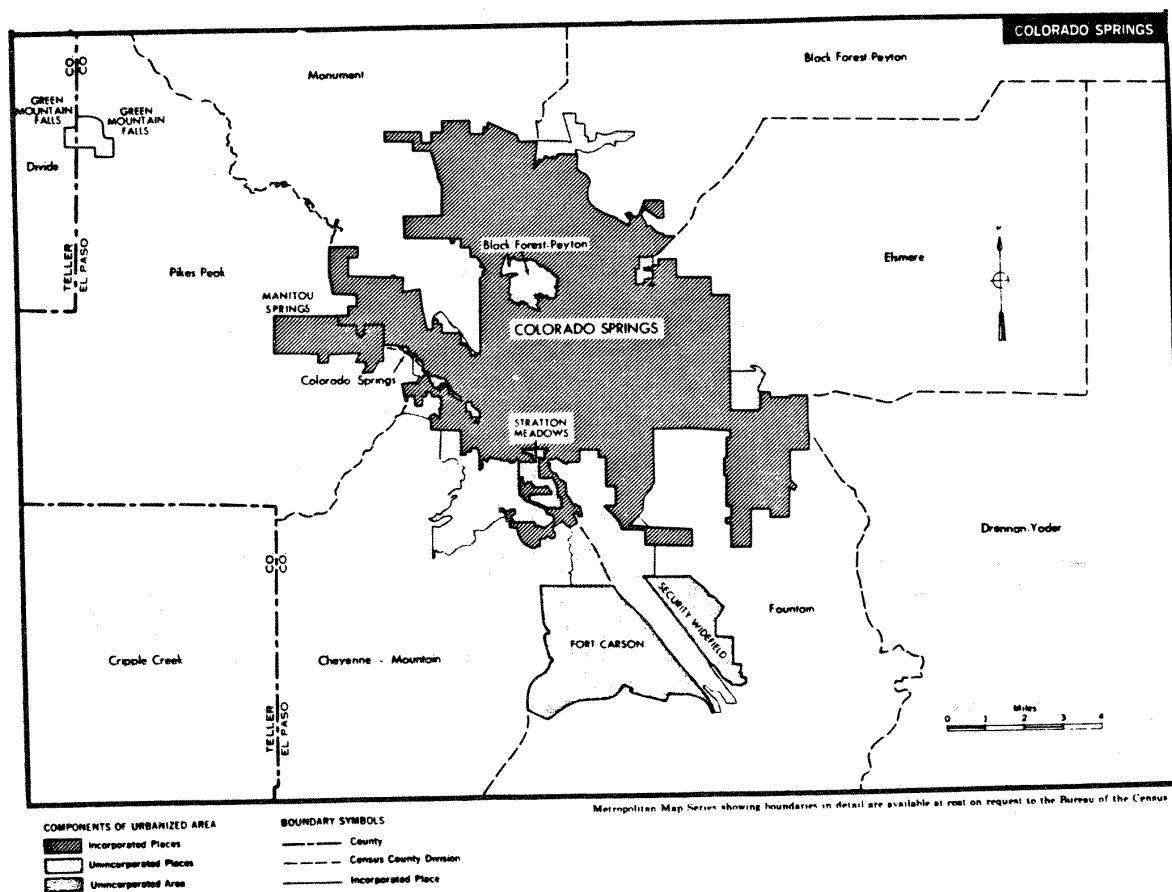


Figure A-2. Colorado Springs Urbanized Area

In addition to the inclusion of the whole urbanized area in the area at risk, the weapons effect "blob" may cover adjacent parts of the non-urbanized surroundings. In this case, the computation of population at risk is based on determining whether the center of population (or centroid) of an adjacent MCD or census tract is within the blob or not. If the centroid falls within the area of 50 percent probability of exceeding 2 psi blast overpressure, the entire population of the tract or MCD is counted among the population at risk. If the centroid is outside the weapons-effect area, none of the population is included. In other words, if over half the population is "at risk", they are all considered so. If less than half, none are.

For the Colorado Springs example, page 60 of TR-82, opposite the blob map of Colorado, shows the entire urbanized area population of 204,766 as being at risk. Additionally, 18,117 nonurbanized residents of El Paso County are shown at risk in the lower portion of the table. Thus, a total of 222,883 people (total not shown) are considered at risk in the Colorado Springs area.

Referring to the printout material for El Paso County shown in Figure A-1, the first line indicates that El Paso is number 041 in Colorado. There follows the code for population: total (T), urban (U), rural (R), and urbanized area (UA); the numbers follow and the last three add up to the first. Finally, the average fallout dose for county is given (2299) and a level indicating the county is not at fallout risk as defined earlier. There follows a listing of MCDs that experience at least 1 psi blast overpressure. Thus, not all MCDs in a county may be listed. (In El Paso County, Drennan-Yoder census county division is not listed.) The population coding is somewhat different: total (T), urbanized area (U), and nonurbanized (N). Because one census county division is not listed, the total of the first column is less than the total (235,972) given for the county. But the second column adds up to 204,766, the population of the urbanized area, because all MCDs contributing to the urbanized area are always included.

Whether the nonurbanized area part of the population of these MCDs are considered at risk depends on the blast overpressure situation at their centroids. Following the population counts are a series of coded alphanumerics indicating that the weapon cluster responsible for the effects was number 803 and that the urbanized area affected was number 1720 (Colorado Springs). Then, the blast overpressure at the centroid in terms of 50 percent probability is shown. The first 5 MCDs are above 2 psi and, hence, in the population at risk; the last two are not. The nonurbanized-area population of those MCDs at risk add to 18,117. The remaining two (10,177 and 1674) when added to the population of the missing MCD (1238) equal the "Risk Reduced County Reception Center Population" (13,089) shown on the last line for the county.

It can be seen, then, that while there is a relationship between the hypothesized weapons-effects "blob" and the area containing the population at risk according to the computer printout, there can be and usually are substantial differences. Perhaps a summary distinction might be that whereas the map "blob" is the region of potentially significant direct effects, the printout addresses the question of who ought to be relocated in a crisis. This may appear to be a tenuous distinction both to the planning team and to State and local officials but it is nonetheless an important aspect of the choice of a suitable risk area.

One reason for always including the urbanized area in the area at risk is that it is the urbanized area that is so densely populated that major loss of life can result if the area is subjected to nuclear weapons effects. Another reason is that it would be difficult to develop a credible plan for relocating only part of a city's population even though the "blob" may suggest this. The urbanized area always includes the central city -- except for a few so-called "extended cities" that have annexed areas that are essentially rural in character. For extended cities, only the urban part is considered as the central city. One additional problem often encountered when dealing with an urbanized area is that parts of its boundary may not coincide with political boundaries or be readily describable in public information materials.

In July 1977, NCP planners were furnished a computer printout of the latest available data concerning blast and fallout radiation levels broken down to the Minor Civil Division (MCD) level for all Counties and States. Figure A-3 illustrates a typical page from this printout. The first column identifies the county by Code number and the county is also identified at the end of a given listing by name. The second and third columns identified the MCD by Bureau of the Census Code number and name. The fourth column identifies the 1970 population. The fifth and sixth columns present the latitude and longitude for the population centroid for each MCD. The seventh column identified as "F/O" presents the anticipated four-day dose to the nearest thousands of Rads measured at the MCD population centroid. The eighth column "P Max", contains the anticipated blast overpressures (to the nearest tenth of a psi) also measured at the MCD population centroid. The last two columns identify Bureau of the Census Code for the urbanized area (as appropriate) along with the population assigned to the urbanized area.

Although this data is presented in greater detail than previously provided in ADAGIO printouts and TR82, it should not be assumed to be more accurate. The data is conservative in that all weapons were ground burst to maximize radiation levels and then all weapons were air burst to maximize overpressures. Obviously, such events could not occur simultaneously.

Because of the variability in the winds due to the seasons, there is a considerable level of uncertainty with respect to the fallout radiation doses contained in the computer printout (i.e., there is a 50 percent probability of not exceeding the fallout levels shown). Small variations in weapon burst points might also produce significantly different fallout results at the MCD level. In view of such uncertainties, the NCP planner should use the data judiciously and only as a "planning guide" rather than as an "inflexible standard". However, even with such drawbacks, the printout provides much useable information for planning purpose.

FIGURE A-3

STATE - 01 ALABAMA									
COUNTY MCD	NAME	POPULATION		LATITUDE	LONGITUDE		F/D	PHAX	URBANIZED AREA
									POPULATION
001	005 AUTAUGAVILLE DIV	2876	32-27-18	86-41-50	2	0.0			0
001	010 BILLINGSLEY DIV	1952	32-37-31	86-46-15	1	0.0			0
001	015 MARHURY DIV	2198	32-38-67	86-31-24	1	0.0			0
001	020 PRATTVILLE DIV	17434	32-28-19	86-28-0	2	2.1			0
001	AUTAUGA	24460	32-29-52	86-31-24	2				
003	005 BAY MINETTE DIV	13347	30-52-51	87-45-21	1	0.0			0
003	010 DAPHNE DIV	8661	30-38-11	87-52-41	1	1.7			0
003	015 ELBERTA DIV	30274	30-24-50	87-31-45	1	0.0			0
003	020 FAIRHOPE DIV	10562	30-30-18	87-53-13	0	0.0			0
003	025 FOLEY DIV	10416	30-22-5	87-41-41	0	0.0			0
003	035 RUFERTSDALE DIV	8257	30-36-22	87-41-53	0	0.0			0
003	040 STOCKTON DIV	3470	31-10-55	87-45-4	2	0.0			0
003	045 SUMMERDALE DIV	1793	30-30-1	87-41-56	0	0.0			0
003	HALDWIN	59382	30-37-42	87-45-51	0				
005	005 MAKERMILL DIV	1413	31-46-58	85-18-22	1	0.0			0
005	010 CLAYTON DIV	3250	31-52-40	85-27-28	1	0.0			0
005	015 CLIN DIV	3215	31-40-29	85-34-57	1	0.0			0
005	020 EUREKA DIV	11967	31-56-15	85-9-47	1	0.0			0
005	025 LOUISVILLE DIV	2298	31-46-32	85-32-43	1	0.0			0
005	HARBOUR	22543	31-50-32	85-18-57	1				
007	005 BRENT DIV	4824	32-56-7	87-12-53	1	0.0			0
007	010 CENTREVILLE DIV	3913	32-55-30	87-3-41	1	0.0			0
007	015 PIPER-COLEMAN DIV	851	33-7-3	87-0-32	1	0.0			0
007	020 WEST WILCOX DIV	4224	33-8-34	87-8-2	1	0.0			0
007	WIR	13812	33-0-26	87-8-2	1				
009	005 MOUNTSVILLE DIV	4165	34-2-48	86-37-9	2	0.0			0
009	010 BROOKSVILLE DIV	3071	34-13-21	86-29-12	2	1.2			0
009	015 CLARENCE DIV	3374	34-5-0	86-23-40	2	0.0			0
009	020 CLEVELAND DIV	1875	33-59-21	86-33-46	2	0.0			0
009	025 HAYDEN DIV	3056	33-53-18	86-48-37	3	0.0			0
009	030 LOCUST FORK DIV	2751	33-51-36	86-39-2	3	0.0			0
009	035 MONTONA DIV	8661	33-55-54	86-27-56	3	0.0			0
009	REUNY	26853	33-50-37	86-32-54	2				

Appendix B

CONGREGATE-CARE SPACE (CCS) ESTIMATING FORM
FOR NON-METROPOLITAN COUNTIES

County Name _____ RSAC No. _____ State _____

ESTIMATE SUMMARY

Per Capita

Line 1:	Initial Estimate	+ 3.10
Line 2:	Economic Adjustment (from Schedule A)	
Line 3:	Activity Adjustment (from Schedule B).....	
Line 4:	Additional Resources (from Schedule C).....	+ _____
Line 5:	Final Estimate of CCS (See Instruction 1)	+

SCHEDULE A: ECONOMIC ADJUSTMENT

Line 1:	Per Capita Money Income (CCDB, Table 2, Col. 67).....	\$
Line 2:	Average Per Capita Money Income	\$ <u>2480</u>
Line 3:	Excess (+) or Deficiency (-) (Line 1 less Line 2).....	\$

If Line 3 is +, multiply by 0.001 and enter on Line 4 as increase (+).

If Line 3 is -, multiply by 0.002 and enter on Line 4 as decrease (-).

Line 4:	Potential Money Income Adjustment.....	
Line 5:	Retail Sales (CCDB, Table 2, Col. 135).....	\$
	(See Instruction 2)	
Line 6:	Book Population (CCDB, Table 2, Col. 3).....	
Line 7:	Per Capita Retail Sales (Line 5 ÷ Line 6).....	\$
Line 8:	Average Per Capita Retail Sales.....	\$ <u>1350</u>
Line 9:	Excess (+) or Deficiency (-) (Line 7 less Line 8).....	\$

If Line 9 is +, multiply by 0.001 and enter on Line 10 as increase (+).

If Line 9 is -, multiply by 0.002 and enter on Line 10 as decrease (-).

Line 10: Potential Retail Sales Adjustment

If Line 4 and Line 10 are both increases (+), enter the largest increase on Line 11 and on Line 2 of the Estimate Summary.

If Line 4 and Line 10 are both decreases (-), enter the largest decrease on Line 11 and on Line 2 of the Estimate Summary.

If Line 4 and Line 10 are not both increases or both decreases, enter zero on Line 11 and on Line 2 of the Estimate Summary.

Line 11: Economic Adjustment

(See Instruction 3)

SCHEDULE B: ACTIVITY ADJUSTMENT

Line 1:	Government Employment (CCDB, Table 2, Col. 44)	%
Line 2:	Average Government Employment	<u>16.3</u> %
Line 3:	Excess (+) or Deficiency (-) (Line 1 less Line 2)	%

If Line 3 is +, multiply by 0.05 and enter on Line 4 as increase (+).

If Line 3 is -, multiply by 0.10 and enter on Line 4 as decrease (-).

Line 4:	Government Activity Adjustment	
Line 5:	Employment in Services (CCDB, Table 2, Col. 41)	%
Line 6:	Average Employment in Service Industries	<u>7.0</u> %
Line 7:	Excess (+) or Deficiency (-) (Line 5 less Line 6)	%

If Line 7 is +, multiply by 0.10 and enter on Line 8 as increase (+).

If Line 7 is -, multiply by 0.20 and enter on Line 8 as decrease (-).

Line 8:	Service Activity Adjustment	
Line 9:	Gross Activity Adjustment (Line 4 plus Line 8)	
Line 10:	Percent Work Outside County (CCDB, Table 2, Col. 49)	%

If Line 9 is +, and Line 10 is less than 24%, enter Line 9 increase on Line 11 and on Line 3 of the Estimate Summary.

If Line 9 is +, and Line 10 is 24% or more, enter zero on Line 11 and on Line 3 of the Estimate Summary.

If Line 9 is -, and Line 10 is 8% or more, enter Line 9 decrease on Line 11 and on Line 3 of the Estimate Summary.

If Line 9 is -, and Line 10 is less than 8%, enter 50% of Line 9 decrease on Line 11 and on Line 11 and on Line 3 of the Estimate Summary.

Line 11:	Net Activity Adjustment	
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SCHEDULE C: ADDITIONAL RESOURCES

Line 1:	Book Population (from Schedule A, Line 6)	
Line 2:	Multiply Line 1 by 0.10	
Line 3:	Does county contain special facilities (See Instruction 4) with probable space in excess of Line 2? YES _____ NO _____	
Line 4:	If Line 3 is yes, estimate of total floor space	sq. ft.
Line 5:	Divide Line 4 by 40 if not zero	spaces
Line 6:	Divide Line 5 by Line 1	per capita spaces
Line 7:	Does county contain major industrial plants (see Instruction 5) with probable spaces in excess of Line 2? YES _____ NO _____	

SCHEDULE C: ADDITIONAL RESOURCES (Cont'd.)

Line 8:	If Line 7 is yes, estimate of large facility floor area	sq. ft.
Line 9:	Divide Line 8 by 75 if not zero	spaces
Line 10:	Divide Line 9 by Line 1	per capita spaces
Line 11:	Does county contain one or more <u>private</u> colleges or universities (See Instruction 6) with probable spaces in excess of Line 2? YES _____ NO _____	
Line 12:	If Line 11 is yes, estimate of total floor space	sq. ft.
Line 13:	Divide Line 12 by 50 if not zero	spaces
Line 14:	Divide Line 13 by Line 1	per capita spaces
Line 15:	Does county have significant <u>seasonal</u> resort facilities available to the public (See Instruction 7) with probable spaces in excess of Line 2? YES _____ NO _____	
Line 16:	If Line 15 is yes, estimate of additional floor space	sq. ft.
Line 17:	Divide Line 16 by 50 if not zero	spaces
Line 18:	Divide Line 17 by Line 1	per capita spaces

If Line 8, Schedule B, is negative, enter Line 18 total on Line 19.

If Line 8, Schedule B, is positive, add it to 0.7, subtract from Line 18 and if
difference is positive, enter on Line 19. Otherwise, enter zero on Line 19.

Line 19:	Seasonal resort facilities	per capita spaces
Line 20:	Additional Resources (Add Lines 6, 10, 14 and 19 and enter here and on Line 4 of the Estimate Summary	per capita spaces

INSTRUCTIONS

Instruction 1: Estimate of Per Capita CCS. The estimate of per capita congregate-care spaces available in the county may be multiplied by the population of the county to obtain an estimate of the gross number of 40-square foot spaces that might be expected in an actual survey of nonresidential, non-farm facilities. Since a portion of this space

will be in facilities that may prove unsuitable for housing people or that may be needed for essential activities, use two-thirds of the gross number as the net spaces available. If a reduced space allocation must be used in the planning region to accommodate the risk population within reasonable travel distances, multiply the resulting net figure by the ratio of the standard 40 square feet to the reduced allocation.

Note that the Final Estimate is based on adjustments made to an initial assignment of 3.1 CCS per host-county resident. This figure is about 10 percent less than the average for non-metropolitan counties. In past surveys, about half of surveyed counties were found to contain facilities with gross CCS within plus or minus 25 percent of the average. However, the full range of variation is from about 3 times the average to only 1/3 the average.

The adjustments summarized in Lines 2 and 3 of the Estimate Summary are based on census data in the 1972 County and City Data Book issued by the Bureau of the Census. This issue must be used if a valid estimate is to be made. Other than this restriction, the economic and activity adjustments of Schedules A and B can be made with no personal knowledge of the county. These adjustments can be positive or negative; that is, increases to or deductions from the initial estimate of 3.1. It is very important to keep track of these increases and decreases by using the proper sign (+ or -) and to indicate on Lines 2 and 3 of the Estimate Summary by the proper sign whether the adjustment is an increase or a decrease in the per capita CCS.

If only the adjustments that can be made from use of the 1972 County and City Data Book are made (Lines 2 and 3 but not Line 4) the likelihood that the survey result will be within plus or minus 25 percent of the "desk-top" estimate is increased to about 75 percent. In particular, failure to execute Schedule C will underestimate the per capita CCS in counties rich in resources not reflected adequately in the census indicators. Line 4 of the Estimate Summary is always an increase in the per capita CCS when it is not zero. To execute Schedule C, the planner must have personal knowledge of additional resources in the county or must obtain the required information from county officials and State agencies as described in subsequent instructions. If all elements of the Estimate Summary are completed, the likelihood that the survey result will be within plus or minus 25 percent of the Final Estimate is increased to about 85 percent and the likelihood that the error is greater than about 35 percent is quite small.

Instruction 2: Retail Sales. The retail sales figure in Column 135 of the county table (Table 2) of the 1972 County and City Data Book is in thousands of dollars, as indicated at the head of the column. Therefore, the planner must add three more zeros to the number given to obtain the appropriate value for entry in Line 5. Otherwise, when

divided by the "book population" on Line 6, the per capita retail sales will be a thousand times too small. As a check, note that the average per capita retail sales in non-metropolitan counties is \$1350 (Line 8). Only rarely will the per capita retail sales for a particular county fall below \$1000 or over \$3500. Note also that it is important to use the book population on Line 6. Do not use an updated or corrected population figure, as the conversion factors used to fill in Line 10 are keyed to the population listed in Column 3 of Table 2.

Instruction 3: Economic Adjustment. The economic adjustment is based on comparison of two factors, Money Income and Retail Sales, with the national averages for non-metropolitan counties. The weighting or conversion factors that determine the imputed effect on facility space are twice as large for deficiencies (below-average counties) as they are for counties that are above average. Neither measure by itself is an adequate indicator of the facility space generated by economic activities. If both factors are above average, a strong resource is predicted and the larger of Lines 4 and 10 should be entered here and on Line 2 of the Estimate Summary. Make sure the entry is labeled + as an additive adjustment. Similarly, if both factors are below average, a weak resource is predicted and the most negative (larger of the minus values) should be used. In many counties, one factor may be above average while the other is below average. For example, counties containing a large college or university often show a below-average money income (because of the students) and an above-average per capita retail sales. Counties having a larger commercial center in a neighboring county may have above-average money income and below-average retail sales. In these cases, the data indicate that it is best to regard the county as average economically and to enter no economic adjustment. If an economic adjustment is indicated according to the above rules, make sure that the positive or negative sign is used to indicate whether it should be added to or subtracted from the initial estimate.

Instruction 4: Special Facilities. One kind of housing resource that is not accounted for by the census indicators in Schedules A and B is the space that may be available in what are called "special facilities." Special facilities are defined by DCPA as the following: (1) Mines, (2) Caverns or caves, (3) Tunnels, (4) Subways, (5) Underpasses, (6) Underground storage facilities, (7) Inactive military works, and (8) Other special facilities. This set of designations was intended to be applied to shelter from fallout but many may be suitable for temporary housing as well.

If the county is known to contain a number of mines or caves, it must be determined whether parts of them are suitable for temporary habitation. That is, would they be surveyed for this purpose? Large tunnels may also be considered. Subways are not found in non-metropolitan counties. Underground storage facilities might exist for potatoes or other crops. Inactive military works may be an important

resource in some counties. The definition should be broadened to include any inactive military or government installation that would not be reflected in the measure of government employment in Schedule B. Among "other" facilities that have been considered for survey are highway culverts.

If the county may contain any special facilities, a knowledgeable local official should be asked to judge whether any are usable and whether they are likely to hold more people at 40 square feet per person than the number on Line 2. If not, their contribution would be too small to encourage further consideration. Thus, a single facility in a county of modest population may be worth pursuing, whereas many large facilities would be needed to make a significant per capita contribution in a county with a large population. When the contribution is likely to be significant, arrangements should be made to get a reasonable estimate of total usable floor space, short of an actual survey. In addition to local sources of information, State agencies concerned with mining, geology, transportation, agriculture, and military affairs may be of assistance. Once an approximation of the total floor area available is entered into Line 4, it is divided by 40 to obtain congregate-care spaces and then by the book population to obtain the per capita spaces predicted prior to survey.

Instruction 5: Industrial Facilities. The economic indicators employed in Schedule A provide a measure of industrial as well as commercial and tax-supported facilities that might be in the county. In the average non-metropolitan county, about 0.25 congregate-care spaces are found in industrial facilities and this resource, which is usually composed of a number of locations, is reflected in the initial estimate in the Estimate Summary. However, if the county has one or more unusually large industrial plants, this resource will be undercounted in the average figure. How large a plant must be to be considered an additional resource depends upon the county population. In a county of only a thousand or so persons, a single cotton gin or processing plant may contain 50,000 square feet of usable floor area and, hence, more than one space for every resident. In more populous counties, a major industrial park or fabricating plant may qualify. Comparison should be made with similar counties known to the planner in determining whether any industrial facilities should be counted as an additional resource. Since a survey of many or all industrial facilities is not intended, the names and locations of major facilities should be readily obtained from a knowledgeable local official. As discussed in Instruction 4, a preliminary estimate of the probable number of spaces available in a specific plant site should be obtained before going further. This information should be compared with the number on Line 2. If a single plant site is unlikely to provide at least one-tenth space per capita, it should not be considered an additional resource unless there are several such sites. If the answer to Line 7 is yes, then the total floor space available should be obtained from the facility management and entered on Line 8. Since

industrial facilities are usually occupied in considerable part by nonmovable machinery and equipment, the estimate of floor area should be divided by 75 on Line 9 to obtain a prediction of housing spaces. Line 9 is then divided by the population of the county to obtain the prediction of per capita spaces.

Instruction 6: Private Colleges. Most institutions of higher learning in non-metropolitan counties are supported and operated by some level of government. The amount of government employment in the county considered in Schedule B will be a sufficient measure of the space in such institutions. Large private colleges and universities, such as Dartmouth in New Hampshire or St. Leo in Florida will not be counted by this means. Therefore, the planner should establish whether one or more private residence institutions exist in the county with substantial potential capacity. Where these are found, an estimate of floor space should be obtained from the institution administration. The calculations to obtain predicted per capita spaces are similar to those for special and industrial facilities. There also may be parochial or private schools below the college level which have more than the normal number of school buildings on their property. For example, preparatory schools have residence buildings and these should also be included in the estimate. In many areas, high schools, both public and private, may have separate buildings for gymnasiums. This space is already accounted for in the initial estimate and so these schools should not be considered to be additional resources in this section.

Instruction 7: Resort Facilities. The amount of service employment in the county considered in Schedule B is intended to measure congregate-care space in hotels, motels, camps and allied supporting services for non-residents of the county. A weakness of this measure is that the census information is obtained during early April. This time of year is generally the off-season tourist period. Therefore, it will seriously undercount summer resort areas, such as Mackinac Island, Michigan, where employment is seasonal and often transient. It is also possible that winter resort areas will be undercounted as in some locations the peak seasonal activity may be over by mid-March. If the county has extensive resort facilities (not merely private vacation homes or cottages), they may be an additional resource above and beyond the space accounted for in the initial estimate. In the average county, hotel and motel spaces account for about 0.4 space per capita and other supporting services about 0.3 spaces. Hence resort facilities would need to contribute at least one space per capita to be considered excessive and the contribution of the Service Activity Adjustment (Schedule B, Line 8) must be considered as well. Nonetheless, there are a substantial number of counties that will qualify, including a low-population county in Nevada having a single hotel-casino with space for twice the county population! On Line 16, make sure to estimate the additional floor space provided by resort facilities. If Line 8 of Schedule B is negative, essentially all motel, hotel, and camp space available to the

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public can be included. If Line 8 is positive, the amount should be added to 0.7 spaces. Only spaces on Line 18 in excess of this number should be considered. The local Chamber of Commerce or motel-owners associations are good sources of information.

Appendix C. Sources of Congregate Care

A more complete analysis of housing potential than that suggested in Section 3 would include consideration of other resources that are not a part of the host area survey of nonresidential and nonfarm structures. The census data in the County and City Data Book shows housing capacity not covered by the survey. First, determine the space available in vacant year-round housing units. In mainly rural counties, these will be vacant residences not covered by the survey. Column 77 of Table 2* gives the total number of year-round units. Column 85 gives the number of occupied units. The difference represents the number of vacant units. Column 79 gives the median number of rooms per unit. Reduce this number by one because the Census includes kitchens in the number of rooms. Assume three spaces per room. Thus, Column 77 less Column 85 times Column 79 reduced one room times three gives an estimate of relocatee space in vacant year-round housing.

To assess the capacity of seasonal housing units, locate Table B-1 in the Data Book.* The fourth column opposite the county of interest gives the total number of housing units in the county. Subtract the total number of year-round housing units (Column 77 above) to obtain the number of seasonal housing units. Perform a calculation like that for vacant year-round housing, assuming the same median number of rooms and spaces per room to get an estimate of relocatee space in seasonal housing.

There is no direct data available on habitable space in nonresidential farm buildings. It is known, however, that except on small farms there is more floor space in outbuildings (barns, equipment sheds, garages, etc.) than there is in farm residences. For preliminary purposes, the following procedure should suffice. Column 173 in the Data Book gives the total number of farms in the host county of interest. Column 181 gives the number of farms under 10 acres in size. Subtracting the Column 181 number from the column 173 number gives the number of farms over 10 acres. Assume that there is at least one habitable outbuilding on each farm over 10 acres in size and that on average, 25 persons can be housed in such outbuildings. Hence, multiply the number of farms over 10 acres in size by 25 to obtain the number of relocatee spaces available in nonresidential farm buildings in each host county.

The foregoing does not exhaust, by any means, the possible housing resources for relocatees. Most residential areas have garages and other outbuildings. Parks and camping areas could be used for tents or recreational vehicles--and probably would be used in an actual crisis relocation. There is, however, no easy way to sum up these possibilities in State-level planning.

* Refers to the County and City Data Book published by the Bureau of the Census.

If the planning team has explored some or all of the sources suggested above, it will be useful to summarize the results in tabular form. Column headings might be name of county, resident population, estimate of congregate care space, space in vacant year-round housing, space in seasonal housing, space in farm outbuildings, total estimated housing space (sum of the preceding four columns), and per capita relocatee housing ratio (the preceding column divided by the second column, residential population of the host county). The overall per capita housing ratio can be compared with the hosting ratio discussed earlier. If per capita housing substantially exceeds the hosting ratio, some selectivity in the use of various kinds of housing will be possible in later detailed operational planning or the most remote hosting areas may ultimately be deleted from the State plan. If, on the other hand, the per capita housing availability is close to or less than the average hosting ratio, confining the planning to the State boundaries may not be feasible.

Appendix D. Guidelines on Activities to be
Kept in Operation within Risk Areas
During Periods of Crisis Relocation

Attached are two lists ("List A" and "List B") of categories of risk-area activities. "List A" identifies activities which appear to be so essential to the nation, the State, and/or local community that they should be kept in operation in risk-areas by "key workers" during periods of crisis relocation of up to two weeks in length. The purpose of the list is to provide an initial basis for Regional/State local planners (in industry and government) (1) to determine which activities should be kept in operation, in a given risk-area; and then (2) to estimate how many of the workers of these essential activities should be considered essential -- and should therefore be assigned (with their dependents) to host areas within commuting distance of the higher-risk area, so they can commute to work (e.g., on a two-shift basis).

In the host areas, it is assumed that all activities -- agricultural, mining, manufacturing, or other -- would be kept in operation, at least to the extent that inventories of materials and other essential inputs permit.

Note that the designation of a risk-area activity or plant as "essential" would not automatically mean that all of its employees are also to be identified as "essential" or "key". Only the absolute minimum number of "key" employees, needed to sustain operations, should be asked to commute back into the risk-areas.

It is anticipated that leaders of essential facilities' management, labor, and government would have to work closely together to identify and arrange for supporting those key workers who would be asked to commute to their jobs in risk-areas. The numbers of "key" employees might range from very few to perhaps all of the employees of a facility. One set of estimates for publishing only emergency instructions in a newspaper, for example, ranges from 20% to 30% of its normal peacetime staff.

In planning for an essential activity's employees (e.g., of a refinery) to relocate, it is desirable to have all employees -- both the key commuting workers plus all others of their fellow employees, and their families -- go to the same host area. This has two advantages: It allows flexibility in specifying which employees are "key", and should commute to keep the plant or activity in operation. It also "keeps the company together", so that the employees who are not commuting can assist the dependents of those who do commute in adjusting to host-area living -- for example, in arranging for temporary lodging, feeding, and development of fallout protection, all in cooperation with host-area authorities.

A separate draft “List B” is also attached. It suggests risk area activities that require some commuting by key workers for quick but orderly phase-down to safe standby status, even though the plant is not to be kept in operation.

Estimates of the numbers of all “key workers”, in activities on both lists, are needed as one basis for developing crisis relocation allocation plans during Part II of the CRP process, and for developing detailed plans for commuting in Parts III and IV.

Note that:

(1) Both “List A’ and “List B” are based on initial DCPA research, and are considered valid for planning purposes until revised or amended. However, the lists are provided only as starting points for Regional/State/local CRP planners, and must be reviewed and modified as the local situation may require.

(2) The assumption is that the length if the crisis relocation period would be up to approximately two weeks. This is the basis for a general policy of maximum reduction of urban activity, with operation of the bulk of industrial and service activities to be suspended for the relocation period. Most workers in such industries, with their families, would relocate to host areas and stay there for the duration of the crisis; most workers would not be deemed essential, and would thus not commute to work in the risk-area. The office of Industrial Mobilization of the Department of Commerce has suggested that almost all manufacturing activities could be suspended during periods of crisis relocation of up to two weeks, or even three or four weeks, on the basis that there are usually on hand considerable inventories of many manufactured products.

(3) The activities that are suggested as being essential (i.e., that appear on List “A”), and therefore should be kept in operation during the crisis by commuting workers, generally include:

(a) Risk-area activities to life-support of the evacuated population (e.g., food production, and distribution to host areas; transportation of food and other essentials; minimum-essential medical and hospital operations in the risk-area, as for acute or intensive-care cases existing before relocation starts, or occurring after it begins).

(b) Public-safety operations in the risk area(e.g., police and fire protection for an evacuated city).

(c) Certain activities essential to keeping the total economy going, at a reduced rate (e.g., petroleum production and refining, power generation, etc.).

(d) Certain activities (e.g., broad-spectrum antibiotics plants) whose 2-week production outputs could be directly critical to survival in the event that the crisis escalated to attack, rather than being resolved by negotiation.

(4) In addition to the above, it is possible that an international crisis could result in national directives to continue some military items' production without interruption during even a short crisis relocation. Recognizing this, the current draft "List A" contains an initial listing of three SIC's in munitions (3482, 3483, and 3761). The present rationale for including only these three is that many long lead-time military items in a semi-finished condition (e.g., an aircraft carrier) could probably not be completed and effectively deployed during a short relocation period, whereas an extra 2 weeks of production of certain combat ammunition items, that can be quickly consumed in large quantities, might make a difference in our and/or allies' combat forces' effectiveness, especially if conventional hostilities were underway before crisis relocation.

In any event, the need for uninterrupted production of military material is being carefully analyzed within the Department of Defense, and such analyses could result in additional categories of manufacturing being designated as essential. Crisis relocation planners should keep in mind the possibility that in the future these and other additional industries (and thereby some of their workers) could be deemed essential. This appendix to part I of the CRP guidance would be revised to reflect such additional industries.

(5) Lists "A" and "B" identify industries and activities by Standards Industrial Classification (SIC) codes from the 1972 Manual. Pages 604-644 of the 1972 Manual are a tabulation of 1972 equivalents of 1967 SIC codes. DCPA may be able to provide lists of specific facilities, printed out by SIC codes, including the total number of employees of each. If printouts cannot be furnished, DCPA will provide guidance on possible sources of the data. Note that even if a specific activity is deemed essential, such as a refinery, the number of key workers needed to keep it at full production for up to two weeks will likely be much less than the total peacetime work force. However, only the industry's management can provide valid judgments on such issues.

(6) As mentioned above, "List B" is an interim list of industries that may not need to be kept operating during the relocation period, but which may need to be attended for a few days by a reduced size work force for orderly phase-down to a safe standby status in order to protect people in the area, and to avoid damage to or destruction of equipment. Examples are steel production and some chemical-process industries. A complex like Dow Chemical's Midland, Michigan, plant could probably do this with 10% of

the work force. This 10% may not all need to be from the regular crew; during the 1974 Dow strike, salaried employees (engineers, patent attorneys, et al., constituting less than half the usual work force) not only kept the plant running on two 12-hour shifts, but set production records. At the strike's outset, some slept at the plant. However, the employees needed for crisis phase-down may need to include key workers from the regular shifts, and would need to be assigned to host -areas within commuting distance. "List B" provides some estimates of the percentage of the normal work force who might be needed for orderly phase-down, but here again, only management can give valid estimates.

(7) The number of employees of local, State, or Federal government who are deemed essential must be determined by Local/State/Regional planners. For example, half or more of the local police may be deemed essential to maintain security in the risk city, and should therefore relocate with their families to nearby host areas, to permit assigned officers to commute, on a two-shift basis, for duty in the city. The same may be true of firefighters and municipal water-utility personnel. (Personnel not needed for risk area duty could be assigned to support host-county operations during the relocation periods; see Parts III and IV of the guide.) On the other hand, personnel of city or county tax-assessment offices, library systems, or other administrative-type activities would likely be deemed non-essential, and would relocate with the general population, and remain in host areas until the end of the crisis.

(8) Planning for keeping selected hospital and medical activities in operation in the risk area will require close coordination with the local medical society, hospital administrators, and other representatives of the health professions. Feasibility studies done to date suggest that it may be possible, during a crisis, to reduce hospital patient censuses to about $\frac{1}{4}$ - $\frac{1}{2}$ of the normal amount. However, it also appears that patients requiring intensive care, and other acute cases, will continue to require definitive care in hospitals in risk-areas; in many parts of the country, acute cases arising in host-counties during the relocation period may need to be transported to risk-area hospitals, if host-area facilities are not adequate. Such issues must be resolved in planning with medical/health professionals (primarily during Part IV planning), but if it is concluded that hospitals, for example, must continue to operate for half or more of the normal patient load, this suggest that something over half of hospital staff should be designated as key workers, to be assigned to closer-in host-areas.

“LIST A”*

CANDIDATE ACTIVITIES TO BE KEPT IN
OPERATION WITHIN RISK AREAS DURING
PERIODS OF CRISIS RELOCATION

Division A - Agriculture, Forestry, Fisheries

(Note that few agricultural and related industries are found in higher risk-areas, which are primarily urban. However, when risk-areas do contain agricultural activities, State/local planners may wish to consider recommending that they be kept in operation during the crisis relocation.)

<u>SIC CODES</u>	<u>TITLES</u>	<u>RATIONALES</u>
0111	Wheat	
0112	Rice	
0115	Corn	
0116	Soybeans	
0119	Cash Grains, Not Elsewhere Classified	
0133	Sugar Crops	
0134	Irish Potatoes	
0139	Field Crops, except cash Grain	
0161	Vegetables and Melons	
0171	Berry Crops	
0172	Grapes	
0173	Tree Nuts	

*“List B” is also attached, and suggests activities that require a partial work force for orderly “phase-down” of plants into safe-standby status.

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<u>SIC CODES</u>	<u>TITLES</u>	<u>RATIONALES</u>
0174	Citrus Fruits	
0175	Deciduous Tree Fruits	
0191	General Farm, Primarily Crops	
0211	Beef Cattle, Feedlots	
0212	Beef Cattle, except Feedlots	
0213	Hogs	
0214	Sheep and Goats	
0219	General Livestock, except Dairy, Poultry and Animal Specialties	
0241	Dairy Farms	
0251	Broiler, Fryer, and Roaster Chickens	
0252	Chicken Eggs	
0253	Turkeys and Turkey Eggs	
0254	Poultry Hatcheries	
0279	Animal Specialties, not Elsewhere Classified (Honey Production Only)	
0723	Crop Preparation Services for Market (Flour and Grist Mills Only)	
0741	Veterinary Services for Livestock (except animal specialties)	

Division B

Mining

(Note that few mining and related industries are found in higher risk areas, which are primarily urban. However, when risk areas do contain mining activities, State/local planners may wish to consider recommending that they be kept in operation during the crisis relocation.)

1111	Anthracite Mining
1211	Bituminous Coal & Lignite

<u>SIC CODES</u>	<u>TITLES</u>	<u>RATIONALES</u>
<u>Division B</u>	<u>-Mining (Cont'd)</u>	
1311	Crude Petroleum & Natural Gas	
1321	Natural Gas Liquids	
<u>Division D</u>	<u>-Manufacturing</u>	
2011	Meat Packing Plants	
2013	Sausage and other Prepared Meats	
2016	Poultry Dressing and Packing, Wholesale	
2017	Poultry and Egg Processing	
2021	Creamery Butter	
2022	Cheese	
2023	Condensed and Evaporated Powdered Milk	
2026	Fluid Milk	
2032	Canned Specialties (baby food)	
2033	Canned Fruits and Vegetables	
2034	Dehydrated Fruits and Vegetables	
2037	Frozen Fruits, Fruit Juices and Vegetables	
2041	Flour and Grain Mill Products	
2043	Cereal Preparations	
2044	Rice Milling	
2045	Blended and Prepared Flour	
2046	Wet Corn Milling	
2047	Dog, Cat and other Pet Food	

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<u>SIC CODES</u>	<u>TITLES</u>	<u>RATIONALES</u>
<u>Division D</u>	<u>-Manufacturing (Cont'd)</u>	
2048	Prepares Feeds, Not Elsewhere Classified	
2051	Bread	
2052	Cookies and Crackers	
2061	Cane Sugar	
2062	Cane Sugar Refining	
2063	Beet Sugar	
2074	Cottonseed Oil Mills	
2075	Soybean Oil Mills	
2076	Vegetable Oil Mills	
2079	Edible Fats and Oils	
2082	Malt Beverages	
2086	Battled and Canned Soft Drinks and Carbonated Waters	
2095	Coffee	
2097	Manufactured Ice	
2098	Pastas	
2099	Food Preparations	
2647	Sanitary Paper Products	
2654	Sanitary Food Containers	
2711	Newspapers, Publishing.....	Required for publication of general news and emergency information during the crisis, but omitting advertising, etc.
2812	Alkalies and Chlorine.....	Especially chlorine for potable water treatments
2831	Biological Products	
2833	Medical Chemical and Botanical Products	
2842	Specialty, Cleaning, Polishing...	Sanitation preparation only and Sanitary Preparation

<u>SIC CODES</u>	<u>TITLES</u>	<u>RATIONALES</u>
<u>Division D</u>	- <u>Manufacturing (Cont'd)</u>	
2834	Pharmaceutical Preparations	
2879	Pesticides and Agricultural Chemicals	Insecticides, Rodenticides, and pesticides only.
2911	Petroleum Refining	Continuous process industry whose products are basic to continuity of many other uninterrupted SIC's.
2992	Lubricating Oils and Greases	
3221	Glass Containers	
3411	Metal Cans	Depends on time of year for those producing food containers.
3482	Small Arms Ammunition	Ordnance that may be consumed in high volume in combat operations.
3483	Ammunition Except Small Arms	-ditto-
3761	Guided Missiles and Space Vehicles	-ditto-
<u>Division E</u>	- <u>Transportation, Communication, Electric, Gas, and Sanitary Services</u>	Limited to level needed to support <u>essential</u> activities within host <u>and</u> risk areas.
4011	Railroads, Line-Haul	
4013	Switching and Terminal Companies	
4111	Local and Suburban Transit	
4119	Local Passenger Transportation (Other)	
4131	Intercity and Rural Highway Passenger Service	
4141	Local Passenger Transportation Charter Service	
4142	Passenger Transportation Charter Service, Except Local	

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<u>SIC CODES</u>	<u>TITLES</u>	<u>RATIONALES</u>
<u>Division E</u>	- <u>Transportation, etc. (Cont'd)</u>	
4151	School Buses	used only as required to support essential production, etc...not for educational services
4212	Local Trucking, without Storage	
4213	Trucking, Except Local	
4214	Local Trucking, With Storage	
4221	Farm Product Warehousing and Storage	
4222	Refrigerated Warehousing and Food Lockers	
4226	Special Warehousing (only oil, gasoline, petroleum)	
4231	Maintenance Facilities for Motor Freight	
45	Transportation by Air ...	but omit sightseeing services under SIC 4521
4612	Crude Petroleum Pipe Lines...	Essential to continuity of refining & activities constrained by refinery products.
4613	Refined Petroleum Pipe Lines	
4619	Pipe Lines (Other)	
4811	Telephone Communications	
4821	Telegraph Communications	
4832	Radio Broadcasting	
4833	Television Broadcasting	
4899	Communication Services (Other)	
4911	Electric Services	

<u>SIC CODES</u>		<u>TITLES</u>	<u>RATIONALES</u>
<u>Division E</u>	-	<u>Transportation, etc (Cont'd)</u>	
4922		Natural Gas Transmission	
4923		Natural gas Transmission and Distribution	
4924		Natural Gas Distribution	
4925		Other Gas Production and/or Distribution (LPG for example)	
4931		Electrical and Other Services Combined	
4932		Gas and Other Services Combined	
4941		Water Supply	
4952		Sewage Systems.....	Operate at minimum capacity as needed to forestall disease vectors.
4961		Steam Supply	
4971		Irrigation Systems	
<u>Division F</u>	-	<u>Wholesale Trade.....</u>	Minimum needed to support <u>essential</u> activities within risk <u>and</u> host areas.
5013		Auto Parts & Supplies.....	Select several of the larger full-service establishments.
5052		Coal and other Minerals..... and Ores	Limited to Coal and Coke.
5086		Professional Equipment and..... Supplies	Limited to medical and Surgical.
5122		Drugs	Select only wholesalers handling biological and pharmaceuticals.
5141		Groceries	
5142		Frozen Foods	
5143		Dairy Products	
5144		Poultry and Poultry Products	
5146		Fish and Seafoods	
5147		Meat and Meat Products	

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<u>SIC CODES</u>		<u>TITLES</u>	<u>RATIONALES</u>
<u>Division F</u>	-	<u>Wholesale Trade (Cont'd)</u>	
5148		Fresh Fruits & Vegetables	
5149		Groceries and Related Products, Not Elsewhere Classified	
5153		Grain	
5154		Livestock	
5159		Farm-Product Raw Materials, Not Elsewhere Classified	
5161		Chemicals and Allied Products.....	Especially detergents
5171		Petroleum Bulk Stations and Terminals	
5172		Petroleum and Petroleum Products, Except 5171	
5181		Beer & Ale (wholesale-distributor)	
5191		Farm Supplies.....	Especially Insecticides, Rodenticides and pesticides
5199		Nondurable Goods, Not Elsewhere Classified	Bags, Textiles-Wholesale Charcoal Wholesale Greases, animal & Vegetable, Ice, Linseed Oil, Molasses Saus- age Casings, Oils, except cooking
<u>Division G</u>	-	<u>Retail Trade</u>	Minimum required to support <u>essential</u> activities within risk area. This could include meeting needs of commuting key workers.
5411		Grocery Stores	
5541		Gasoline Service Stations	(For Codes 5411, 5541, 5812, 5983, 7218, & 7538, it is recommended that 10% or fewer of the establishments be kept open, with the specific establishments to be deter- mined during operational planning)
5812		Eating Places	
5983		Fuel Oil Dealers	
5984		Liquefied Petroleum Gas	
<u>Division I</u>	-	<u>Services</u>	
7218		Industrial Laundries	Especially those that serve hospitals, drug plants & food handling establishments.

<u>SIC CODES</u>		<u>TITLES</u>	<u>RATIONALES</u>
<u>Division I</u>	-	<u>Services (Cont'd)</u>	
7538		General Automotive Repair Shops	
80		Health Services (Selected Establishments)	Especially hospitals providing intensive care to resident patients.

“LIST B”INTERIM LIST OF RISK-AREA ACTIVITIES THAT JUSTIFY TEMPORARY SHUTDOWN DURING CRISIS
RELOCATION, SHOWING PERCENT OF WORKFORCES WHO MUST COMMUTE TO PREFORM
SHUTDOWN PROCEDURES FOR PROTECTING LIFE AND PROPERTY

(1)					(2)	(3)	(4)
					(Sources: See attached bibliography.)		
S. I. C. NO.					TITLE	Minimum Shutdown Time	% of Workforce Required
2	6	2	1		Paper mills, except building paper	16 hrs	5 to 25% **
2	6	3	1		Paperboard mills	16 hrs	
2	6	4			Converted paper and paperboard products, except containers and boxes	16 hrs	
2	6	6	1		Building paper and board mills	16 hrs	
2	8	1	9	3	Sulfuric acid	2 da	
2	8	1	9	4	Hydrochloric acid	1-2 da	
2	8	1	9	7	Sodium manufacture (& compounding of)	2 da	
2	8	1	9	9	Carbide	8 hrs	
2	8	2	1		Plastic materials and resins	8-24 hrs	
2	8	4			Soaps, detergent, cleaning preparation perfumes, cosmetics, and other toilet preparations	4-6 hrs	
2	8	5			Paints, varnishes, lacquers, enamels, and allied products	8 hrs	
2	8	6	5		Cyclic (coal tar) crudes and cyclic intermediates (includes) resorcinol)	8-40 hrs	
2	8	6	9		Industrial organic chemicals, n.e.c.		

* This column omits facilities requiring less than one-half hour to shut down safely; i.e., so that danger to people and property is prevented during and after shutdown. Blanks in this and column (4) indicate “No data available at present.” “Weeks” refer to 7 day periods. Plants vary within same industry.

** Preliminary, unofficial estimates (on a 2-digit SIC basis) by the Office of Industrial Mobilization, Dept. of Commerce, April 1974. Plants vary within same industry.

(Note: re 2911 prefixed items below: because almost all U.S. refineries and petrochemical plants that can make propulsion fuels should be kept operating in a crisis, and because they are also the plants that make the products * below in the same equipment that is producing the gasoline, etc, it is unlikely that many facilities bearing SIC 2911 prefixes below can be shut down unless the products shown below are the only outputs from such facilities.)

(Sources: See attached bibliography.)

S. I. C. No.					TITLE	Minimum Shutdown Time	% of workforce Required
2	8	7	4	1	Phosphoric acid	16 hrs	
2	8	7	9		Agricultural chemical, n.e.c.		
2	8	9	1		Adhesives, cement, and sealants	8-16 hrs	
2	8	9	2	1	Nitroglycerine, TNT		
2	9	1	1	0	*Other finished petroleum products, including waxes, non-medicinal petrolatum, etc	8hr	
2	9	1	1	6	*Liquified refinery gases (feed stock & others)	36+hr.	
2	9	1	1	7	*Lubricating oils and greases	16 hr	
2	9	1	1	8	*Unfinished oils and lubricating oil base stock	16 hr.	
2	9	1	1	9	*Asphalt	36+ hr.	
2	9	5	1	0	Paving mixtures and blocks, not made in refineries		
2	9	5	2		Asphalt felts and coatings	8 hr.	
2	9	9	2	0	Lubricating oils and greases made from purchased products		
2	9	9	9	0	Petroleum and coal products, n.e.c.	36 hr.	
3	0	1	1		Tires and inner tubes	6-8 hr.	

** Omits facilities requiring less than one-half to shut down safely; i.e., so that danger to people and property is prevented during and after shutdown.

(Sources: See attached bibliography)

S.I.C. NO.						TITLE	Minimum Shutdown Time	% of Workforce Required
3	0	2	1			Rubber and plastic footwear	6-8 hr	
3	0	3	1			Reclaimed rubber	6-8 hr	
3	0	4	1			Rubber and plastic hose and belting	6-8 hr	
3	2	1	1			Flat glass	2-3 da	1 to 5% **
3	2	2	9			Pressed and blown glassware, n.e.c.	2-3 da	1 to 5% **
3	2	3	1			Glass products made of purchased glass	1 day	1 to 5% **
3	2	4	1			Cement	3-4 da	1 to 5% **
3	2	5	1			Brick and structural clay tile	1day	1 to 5% **
3	2	5	3			Ceramic wall and floor tile	1day	1 to 5% **
3	2	5	5			Clay refractories, fire brick	1 day	1 to 5% **
3	2	6	1			Vitreous china plumbing fixtures; bathroom accessories	1day	1 to 5% **
3	2	6	2			Vitreous china table and kitchen articles	1day	1 to 5% **
3	2	6	4			Porcelain electrical supplies, e.g., insulators	1day	1 to 5% **
3	2	7	4	0		Lime, including hydrated; quicklime	2 da	1 to 5% **
3	2	9	5			Mineral and earths, ground or otherwise treated	1 day	1 to 5% **

** Preliminary, unofficial estimates (on a 2-digit SIC basis) by the Office of Industrial Mobilization, Department of Commerce, April 1974.

(Sources: See attached bibliography)

S.I.C.NO.					TITLE	Minimum Shutdown Time	% OF Workforce Required
3	2	9	6		Mineral wool (glass wool, insulation, acoustical tile	1 day	1 to 5%**
3	2	9	7		Non-clay refractories	1day	1 to 5%**
3	2	9	9		Non-metallic mineral products, n.e.c.	1day	1 to 5%**
3	3	1	2	1	Blast furnaces (may require 6+ months to re-start)	1-2 days	
3	3	1	2	1	Coal and coke ovens and stills for chemical and gas recovery (must replace, if shut down)	2-4 wks	
3	3	3	1	1	Copper smelter products	1-2 da	5 to 7%**
3	3	3	1	2	Refined primary copper	1 wk	5 to 7%**
3	3	3	3	1	Zinc residues and other zinc smelter products	1-2 da	
3	3	3	3	4	Refined primary zinc (including remelt)	1-2 da	
3	3	3	4	7	Aluminum ingot, produced in primary aluminum reduction plants	2da	
3	3	3	4	8	Aluminum extrusion billets, produced in primary aluminum reduction plants	1 da	
3	3	3	9	7	Primary magnesium, nickel, tin, cadmium, and titanium sponge, etc, smelted or refined	1-2 da	
3	3	4	1	2	Secondary copper(pig, ingot, shot, etc)	1-2 da	5 to 7%**

**Preliminary, unofficial estimates (on a 2-digit SIC basis) by the Office of Industrial Mobilization, Department of Commerce, April 1974.

(Sources: See attached bibliography.)

S.I.C.NO.					TITLE	Minimum Shutdown Time	% of Workforce Requires
3	3	4	1	4	Secondary zinc, including re-melt	1-2 da	
3	3	4	1	6	Secondary magnesium, etc (see 33397 above)	1-2 da	
3	3	4	1	7	Aluminum ingot, produced by secondary smelters	2 da	
3	3	4	1	8	Aluminum extrusions, billets produced by secondary smelters	1 da	
3	4	7	9		Aluminum coating of metal	2 da	
3	5	6	7		Manufacturing of industrial process furnaces, ovens, and kilns	1 da	
					(Note: Equipment common to many industries not listed above (e.g., steam boilers, turbines, etc) may also require slow-paced shutdown which, in turn, would require that some workers commute to inactive such items.)		

BIBLIOGRAPHY

Notes

1. “List B”, like “List A”, is to be used only as a starting point for planning. Great care must be taken in any discussion of saving lives by temporarily shutting down business enterprises, some of which may require weeks to put back into normal operation after relocatees return.
2. The bulk of the “List B” entries were derived by extrapolation from the texts of references 1 and 2 below using references 3, 4, and 5 to select (judgmentally in many cases) the S.I.C. codes shown.
3. The S.I.C. coding system, while it is gaining in use and is probably the best tool around for classifying industrial activities and products, is not one that is assiduously applied by most people in private industry. Quoting from p. 2 of reference 7:

“While awareness of the S.I.C. has increased greatly because of its growing use by the regulatory agencies of government, it is probably safe to say that relatively few in industry know their own S.I.C.’s and even fewer the whys and wherefores of that assignment. ”

REFERENCES

(This is a partial list; it shows only the principle works considered.)

1. F.R. McFadden & Chas. D. Bigelow, Development of Rapid Shutdown Techniques for Critical Industries, Menlo Park, Calif.: Stanford Research Institute, 1966. (Does not use S.I.C. codes)
2. J.H. Tate and J.W. Billheimer, Development of Rapid Shutdown Techniques for Critical Industries, the Aluminum Industry, Menlo Park, Calif.: Stanford Research Institute, 1967. (Does not use S.I.C. codes)
3. Standard Industrial Classification Manual 1972, Wash., D.C.: Office of Management & Budget, Executive Office of the President, 1972.
(N.B.*Appendix D outlines the concept of the S.I.C. system. Appendix C gives tables for converting certain 1967 S.I.C numbers (ref’s 4 and 6) to the 1972 codes in current use.)

*Updates and supersedes ref. 4 below.

4. Standard Industrial Classification Manual 1967, Wash., D.C.: Bureau of the Budget, Executive Office of the President. (Superseded by ref. 3 above, however, many documents in current use still use 1967 codes.)
5. Numerical List of Manufactured Products, (new 1972 S.I.C. Basis), 1972 Census of Manufactures. Wash., D.C.: Bureau of the Census, U.S. Dept. of Commerce, 1972.
6. Alphabetic Index of Manufactured Products (1967 S.I.C. Basis), 1972 Census of Manufactures, Wash., D.C.: Bureau of the Census, U.S. Dept. of Commerce, 1972.
7. _____, The Standard Industrial Classification: The Increasing Misapplication of a Useful Tool for Government and Industry, Wash., D.C., Machinery and Allied Products Institute (MAPI), July 1, 1974, 22 pages, \$3.00. (This paper's criticisms of the S.I.C. need not deter DCPA usage; MAP's criticisms are directed toward the Federal government's efforts to use the S.I.C. for applying price controls, etc. It is listed as a reference because it gives an "industry view" of some of the major features, advantages, and limitations of the S.I.C.)
8. County Business Patterns: (---State---), Wash., D.C.: Bureau of the Census, U.S. Dept. of Commerce.
9. Individual States' directories of business and industry. These vary greatly in thrust, content, completeness, format, and not all use the S.I.C. codes. Examples:
 - a. Minnesota Dept. of Economic Development, Minnesota Directory of Manufactures 19 , St. Paul, Minn., Dept. of Administration: (Uses S.I.C. codes; post - 1972 edition may have 1972 codes, but 1970-71 uses 1967 codes).
 - b. Directory of New England Manufactures, Boston, Mass.; George D. Hall Co., 1974 (Thirty-eight Annual Edition) (Uses S.I.C. codes; gives no. employees).
 - c. 1974 New York State Industrial Directory, New York, N.Y.: N.Y. State Industrial Directory, 2 Penn Plaza, 10001 (uses S.I.C. codes).

Appendix E

(ANNEX F)

RESOURCE AND SUPPLY SERVICE

FOOD DISTRIBUTION

Extracted from the prototype
sample plan developed for
the State of Colorado

I. MISSION

The mission of the Food Resource and Supply service is to assemble and control supplies, transportation, staging areas, and personnel needed to provide food to residents and relocatees in the State of Colorado. This mission includes redirecting normal supply channels, monitoring deliveries, assisting in food distribution, and coordinating transportation requirements with the Emergency Resource Priorities Board.

II. PARTICIPATION

Federal Agencies:

United States Department of Agriculture/_1

- State Defense Boards/_2
- County Defense Boards/_3

State Agencies:

Colorado Department of Agriculture

- District Food Managers
- County Food Captains
- City and Town Coordinators

Volunteer Organizations:

National Defense Transportation Association
American National Red Cross

Food Industry Representatives - State of Colorado:

Major Wholesale Distributors

- Safeway Foods
- Dillon Company
- National Tea Company
- Associated Grocers of Colorado
- Nobel, Incorporated

III. SITUATION

A. General Situation

1. Relocation of the population of the risk area will occur only at the direction of the Governor of Colorado. Crisis relocation of the risk area population will be mandatory, not voluntary. Principle mode of transportation will be private vehicles over a period not to exceed three days. Population

/_1 USDA has no operating function, liaison function only

/_2 Correct title is "State Emergency Boards"

/_3 Correct title is "County Emergency Boards"

of recognized risk areas (Denver, Boulder, Colorado Springs, and Pueblo) will be directed to designated host counties.

2. After relocation is accomplished, there will be no requirement for goods or services anywhere in the risk area during the relocation period, except as necessary for the preservation of property and the support of essential activities. Critical workers and their dependents will be located in host counties adjacent to risk areas and commute to these areas daily.
3. Once crisis relocation of the risk area population has been directed, the minimum duration of the relocation period will be seven days. The maximum duration of the relocation period is uncertain, but could last several weeks.

B. Food Supply Guidelines

1. Essential food production and processing activities located in risk areas will be continued throughout the crisis relocation period. All host area agricultural production and processing will be continued and, where possible, expanded using the work force relocated from the risk area.
2. Major risk area distribution warehouses operated by grocery chains, independent wholesalers, and institutional suppliers will remain in operation throughout the crisis relocation period to supply retail outlets, restaurants, and mass feeding centers located in the host area. Changing supply patterns for these warehouses will be dictated by the State of Colorado, acting in concert with the USDA* and food industry representatives. Supplies in smaller risk area distribution centers will be transferred as quickly as possible to host area distributors, who will expand operations through the use of commandeered space and relocated workers. Continued operation of larger risk area warehouses and the draining of smaller warehouses may require the use of drivers and transportation equipment from other less critical sectors of the economy.
3. Supplies to risk area retail outlets will be cut off when the relocation order is given. Inventories permitting, these outlets will remain open during the three-day evacuation period before closing for the duration of the crisis relocation period. Any sizeable remaining inventories will be transferred to host area outlets. Risk area grocery clerks will be encouraged to seek employment in host area retail outlets, which will expand operations to meet the increased demand.

*USDA does not have an operational function in a preattack environment.

4. Large-scale mass feeding operations will be established in kitchen-equipped institutions in the host area to feed relocatees in congregate-care facilities. Host area restaurants will expand operations to meet the increased demand. Relocatees lodged in private dwellings will be encouraged to eat with their host families.
5. Prior to the relocation order, price regulation and single purchase limitations will be introduced to control individual food purchases in risk and host area retail outlets. Purchase limitations in the risk area will be set low enough to discourage individual hoarding but high enough permit evacuees to drain risk area retail stores before departing. Conservative purchase limitations will be established in the host area to discourage hoarding. Following the relocation order, ration coupons will be accepted at retail stores, restaurants, and mass feeding centers in the host area in payment for food purchases.
6. Risk area evacuees will be encouraged to transport as much food to the host area as is permitted by their available food stocks and transportation mode.

IV. AGENCY RESPONSIBILITIES

A. The United States Department of Agriculture

The Federal government is responsible, in a postattack situation, for primary food resources (production, processing, storage, and distribution through the wholesale level). In a crisis relocation situation, the State of Colorado has this responsibility. The Colorado Department of Agriculture should jointly plan for the revised disposition of wholesale food stocks with a panel of food industry personnel and the USDA State Emergency Board (SEB). The USDA SEB maintains a listing showing the location and size of primary food resource facilities.

Following an attack, USDA will issue orders controlling the processing, storage, and wholesale distribution of food.

B. THE COLORADO FOOD AGENCY

The Colorado Food Agency is composed of representatives from the Colorado Department of Agriculture and the food industry. This agency develops, in cooperation with other organizations of the State government, and provides, on behalf of the Governor, policies and guidance for the control of food resources (food in all positions, including groceries, hotel, and restaurants, and in homes) consistent with Federal and State objectives. The purpose of these policies and guidance is to assure application throughout the State of measures compatible with National and State plans for the conservation, distribution, and use of secondary inventories of food to prevent their dissipation and waste and to assure that essential needs for food are identified and met within the supplies of food available to Colorado.

With the USDA State Emergency Board and a panel of food industry personnel, the Colorado Food Agency will jointly plan for the revised disposition of wholesale stocks under relocation conditions.

The Colorado Food Agency, acting within the framework of the National Emergency Food Consumption Standard, also receives and acts upon requests for assistance from local government officials. Upon a showing of necessity and evidence of effective rationing, the USDA may be requested to arrange for additional supplies.

In addition, the Colorado Food Agency will:

- Monitor the operation of the revised distribution;
- Evaluate and transmit requests for additional transportation equipment and personnel to the local NDTA representative;
- Issue all policies, orders, and instructions relative to the use or sale of foods.

Following a nuclear attack, USDA's Standby Defense Food Order No. 2 will be put into effect. The State Food Agency will operate food supply functions according to the provisions of the State's Resource Management Plan and the USDA food orders.

C. THE NATIONAL DEFENSE TRANSPORTATION ASSOCIATION (NDTA)

In preparation for a crisis relocation movement, the NDTA will provide inventory data on transportation resources in essential and non-essential sectors of the economy, and will assist in making surveys of transportation capabilities.

During a crisis relocation, the NDTA will provide staff to personnel to:

- Coordinate the emergency movement of people and material.
- Coordinate the transportation of essential supplies and equipment from depots, warehouses, stores or other locations to host area distribution points.
- Coordinate the transportation of civil defense personnel and critical workers to and from risk and host areas.

Similar coordination activities would be carried out following an attack or a resumption of normal activities

D. THE AMERICAN NATIONAL RED CROSS

The American National Red Cross will cooperate and assist local governments with mass feeding operations by:

- Recruiting, training, and assigning personnel in advance of a crisis relocation;
- Organizing volunteers;
- Planning menus to make effective use of available resources;
- Providing support essential for mass feeding stations.

E. Major Colorado Wholesale Distributors (see Appendix 2)

All major chain and independent wholesale distribution centers that command a significant share of any risk area market shall continue to operate throughout the crisis relocation period, following revised distribution guidelines dictated at the State and regional level. In Colorado, all such distribution centers are themselves located in risk areas. The following major distribution centers will be operated throughout the crisis relocation period, to provide food to host area retail outlets, distribution points, and mass feeding centers.

1. Safeway Foods, Denver
2. Dillon Company (King Soopers), Denver
3. National Tea Company, Denver
4. Associated Grocers of Colorado, Denver and Pueblo
5. Nobel, Incorporated, Denver

V. COORDINATION

A. Organization

Appendix 1 shows the proposed organizational chart for the management of food resources under crisis relocation conditions. This chart was adapted from the emergency organization chart developed as part of the Colorado Emergency Resource Management Plan for managing food resources in a postattack environment.

B. Locations and Phone Numbers

The location and phone number of representatives from each state-level element of the organizational chart of Appendix 1 are listed below:

STATE LEVEL MANAGEMENT:

<u>Name</u>	<u>Title</u>	<u>Location</u>	<u>Phone#</u>
1. Brig. General William Wellers	Director, Emergency Resources Chairman, Emergency Resources Practices Board Adjutant General, State of Colorado	300 Logan Street Denver, Co 80203	301/733-2431

<u>Name</u>	<u>Title</u>	<u>Location</u>	<u>Phone #</u>
2. C. N. Vickers (liaison function only)	State Exec. Director USDA-ASCS Chairman, State Emergency Board	2490 W. 26 th Ave. Denver, CO 80211	303/837-4611
3. Clinton Jeffers	Commissioner Colorado Department of Agriculture	State Services Bldg. 1525 Sherman St. Denver, Co 80203	303/222-3561
4. Rex L. Glass	Transportation Coordinator Denver Chapter, NDTA	Director, Physical Distribution/ Traffic Samsonite Corp. 11200 E. 45 th Ave. Denver, Co 80217	303/334-7592 (business) 303/424-2895 (Home)
5. William Martin	Member, Emergency Resource Practices Colorado National Guard	Camp George West Golden, Co 80401	303/279-2511

MAJOR COLORADO STATE FOOD DISTRIBUTORS:
(Ad Hoc Members of Colorado Feed Agency)

<u>Name</u>	<u>Title</u>	<u>Location</u>	<u>Phone #</u>
1. Peter Martin	Regional Manager Safeway Foods	4600 E. 46 th St. Denver, Co	303/377-3665
2. William Thompson	Executive Vice President Associated Grocers Of Colorado	515 Bannock Denver, Co	303/534-1155
3. Robert Beeman	Vice President King Soopers	65 Tijon Denver, Co	303/744-1971
4. Roy Mayberry	Distribution Manager National Tea Company	4120 Brighton Blvd. Denver, Co	303/266-0361
5. F. Knoebel	President Nobel, Inc	1101W. 48 th St. Denver, Co	303/433-6111

C. COMMUNICATIONS

Communications between food processors and distribution centers, and between these centers and retail outlets, restaurants, and mass feeding points, will be primarily by telephone. Leased computer lines currently used by chain stores to transmit inventory needs to central distribution centers will continue to operate.

D. REPORTING PROCEDURES

Chained-operated food distribution centers shall continue their normal polling of host area retail outlets throughout the crisis relocation period and submit daily reports to the Colorado Food Agency. Independent host area retail outlets and restaurants shall submit daily inventory status reports and orders to their wholesale supply centers. These supply centers will in turn submit daily reports to the Colorado Food Agency.

Mass feeding centers shall submit inventory and demand reports to their Host Area County Food Captains following each of the two meals served daily. Emergency situations requiring expedited food shipments shall be reported immediately to the District Food Management Board. Board personnel shall act immediately to provide supplies in an emergency situation. In the absence of an emergency these personnel shall summarize the reports of each host area captain and submit a daily report on consumption, inventory levels, and projected demand to the Colorado Food Agency.

Immediately after shutting down retail operations, risk area retail stores shall report their remaining inventories to the District Food Management Board. Wholesale warehouses to be closed for the duration of a crisis relocation shall report the size of their inventories to the District Food Management Board immediately following issuance of the crisis relocation order in order to obtain transportation assistance in transferring their inventories to the host area.

Reception and care centers shall provide daily reports on the number of evacuees received to the County Food Manager Manager. These reports shall in turn be forwarded to the District Food Management Board.

Requests on the part of major distribution centers for additional equipment and personnel shall be submitted directly to the Colorado Food Agency, which shall forward such requests with recommendations for action to the Director of Emergency Resources. Other requests for additional equipment and personnel shall be submitted to District Food Managers before conveyed to the Colorado Food Agency.

E. ACTION CHECKLIST

1. Preparatory

- a. Review and update relocation plans, establishing requirements for food supplies and logistical support for these

supplies within the risk and host areas after general relocation.

- b. Update inventories of manpower, equipment, and supplies available and plans for removal of stocks to host counties.
- c. Update plans for rechanneling statewide food flow and review key organizational relocation plans.
- d. Review plans for procurement and control of food including rationing plans.
- e. Contact critical risk area distribution centers and review plans regarding their operations and protection.
- f. Contact and organize industrial representatives in emergency management positions.

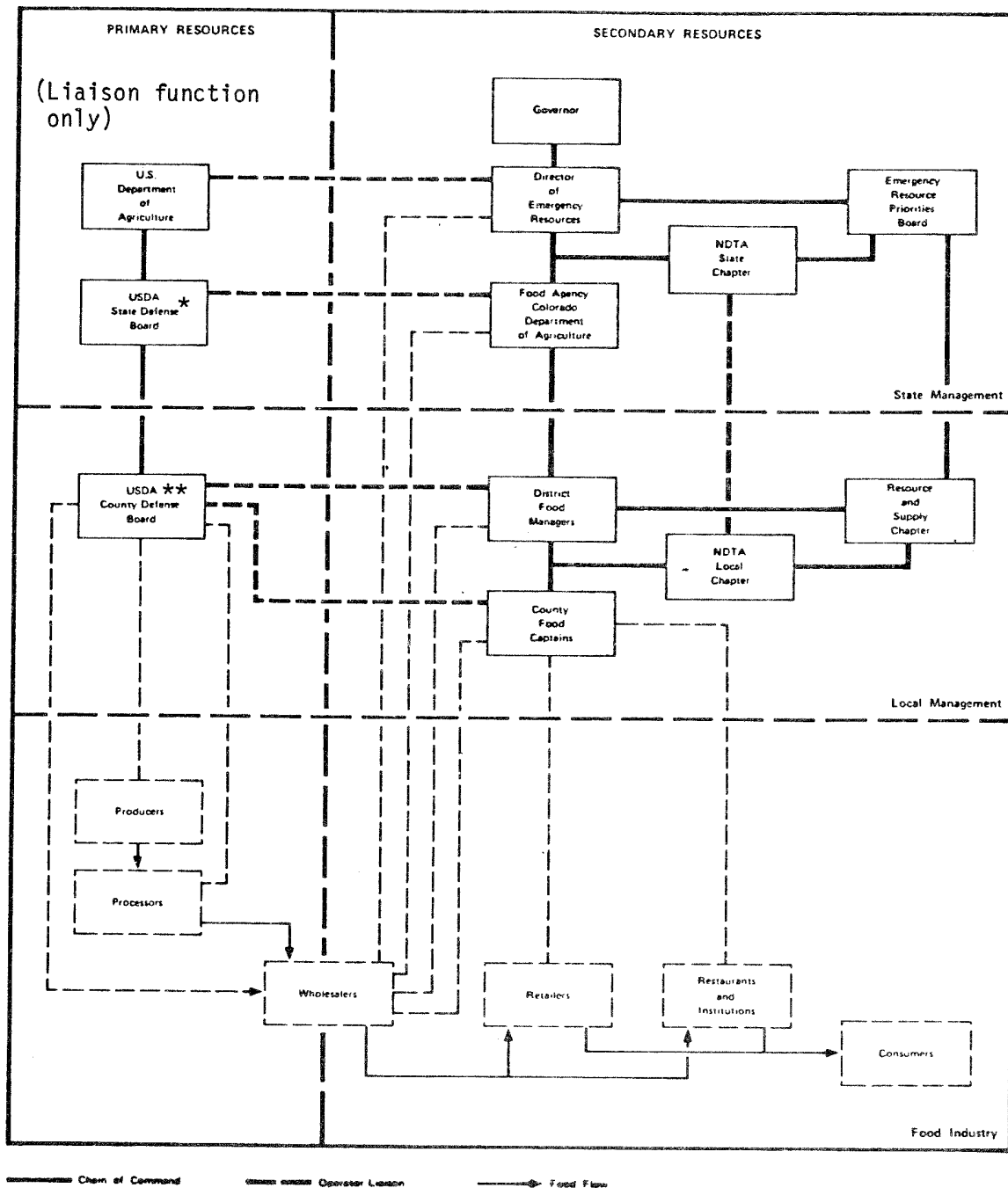
2. Relocation

- a. Inform food industry personnel of Governor's relocation order and assist in provision of additional transportation for food transferral, as needed.
- b. Provide emergency supplies of food to host area retail outlets and mass feeding centers; shut down nonessential risk area services.
- c. Maintain control of supply and procurement of food; monitor supply and consumption levels, adjusting as necessary; supervise and assist in removal of unneeded supplies and equipment from risk area to host counties.
- d. Serve as liaison to food industry to expedite essential products and services, and act on emergency equipment requisition.
- e. Serve as liaison with State regulatory agencies and transmit relevant changes in operating constraints (i.e., driver regulations and weight restrictions) to food industry.

3. Attack

- a. Upon attack warning, direct critical facilities in risk area to shut down operations and take shelter according to plans; move mobile equipment to staging areas or outside the risk area.
- b. Implement Emergency Operations Plans (EOP) as modified by relocation conditions.

Appendix 1 ORGANIZATION FOR MANAGEMENT OF FOOD RESOURCES



*New title State Emergency Board
 **New title County Emergency Board

APPENDIX 2

Revised Wholesale-Retail Distribution Guidelines

Major Risk Area Distribution Centers

All major chain and independent wholesale distribution centers that command a significant share of any risk area market shall continue to operate throughout the crisis relocation period, following revised distribution guidelines that bypass normal risk area outlets. In Colorado, all such distribution centers are themselves located in risk areas. The following major distribution centers will be operated throughout the crisis relocation period, to provide food to host area retail outlets, distribution points, and mass feeding centers.

1. Safeway Foods, Denver
2. Dillon Company (King Soopers), Denver
3. National Tea Company, Denver
4. Associated Grocers of Colorado, Denver and Pueblo
5. Nobel, Incorporated, Denver

To the extent possible, corporate identifies and operating autonomy will be retained throughout the crisis relocation period.

Revised Distribution Patterns

Revised distributing patterns for each of the major distribution centers identified above are outlined in Attachment 1. This attachment identifies the risk area counties in which retail operations are to be suspended, and specifies the host area counties which are to receive the shipments normally destined for each risk area county. The revised activities of each distribution center are summarized below. More detailed guidelines for each distribution center should appear in the crisis relocation plan for the appropriate risk area.

1. Safeway Foods. Safeway is the dominant food chain in Colorado, with outlets in both risk and host areas, and faces the fewest problems in adapting its distribution patterns to support a crisis relocation. The chain's computerized ordering system will enable them to redirect resupply orders normally intended for risk area outlets to pre-specified host area outlets. The revised pattern proposed in Attachment 1 favors the Pueblo area at the expense of the Denver area, to balance the revised pattern proposed for King Soopers, which favors Denver area evacuees.
2. King Soopers. Although King Soopers is a major factor in the Denver food market, where it shares market leadership with Safeway and commands an established 15% of the remaining risk

area markets, the firm has only one host area outlet, located in Larimer County. However, the Dillon Company, which controls King Soopers, also owns City Markets, which is very important in the Grand Junction area with stores in Delta, Eagle, Garfield, Mesa, Moffet, Montrose, and Routt Counties serving the Denver host area. City markets also has an outlet in Durango, in the Colorado Springs host area. Since City Markets and King Soopers are on the same computerized ordering system, the revised distribution pattern of Attachment 2 proposes that King Soopers distribute its supplies through City Market outlets in the Denver and Colorado Springs host areas. In addition, King Soopers should also ship as much of its warehouse inventory as possible by rail to the City Markets' distribution center in Grand Junction.

3. Associated Grocers. Associated Grocers has a larger number of stores in the Colorado host areas than any other firm. As an independent wholesaler, however, Associated Grocers loses control of its food once it is billed and shipped from the central warehouse, and does not normally initiate orders from the central warehouse. Although its ordering system is computerized, it must depend on its independent retail outlets to initiate orders. Under crisis relocation conditions, Associated Grocers would force-feed its larger host area customers with supplies normally reserved for risk area outlets, following the pattern of reassignment indicated in Attachment 1.
4. National Tea Company. The National Tea Company, which controls 6% of the Denver market, 13.5% of the Colorado Springs market, and 16% of the Pueblo risk area markets with its Del Farms, Miller's and National Supermarkets, has no host area outlets in Colorado. Under crisis relocation conditions, therefore, National Tea will have no readily available cooperator outlet for its wholesale food stocks. Accordingly, it is desirable that National Tea provide direct deliveries of stocks normally used to supply risk area supermarkets to the larger host area mass feeding centers in the counties identified in Attachment 1.
5. Nobel, Inc. Nobel Foods is by far the largest distributor of restaurant and institutional food supplies in Colorado, serving customers throughout the State. Under crisis relocation conditions, Nobel should make the adjustments indicated in Attachment 1 and stand ready to supply institutional packs of food to mass feeding centers under the direction of the Colorado Food Agency.

Revised Operating Procedures

Each of the firms indicated above has been interviewed at some length regarding potential measures that might be employed to improve the produc-

tivity of warehouse personnel and transportation equipment under crisis relocation conditions. Each firm expressed the opinion that existing warehouse personnel (or, in some cases, a slightly reduced complement of necessary workers) would be equal to the task of maintaining risk area warehouse operations throughout the crisis relocation period. The potential strain on drivers and existing transportation equipment was recognized as a problem, however. To alleviate this problem, several revised operating procedures were identified. These procedures are summarized below:

1. Take advantage of relaxed regulatory constraints. In time of emergency, it is anticipated that Union and DOT regulations regarding driving time will be relaxed, as well as State-imposed highway weight limitations. Firms should take advantage of these relaxed restrictions to the extent possible, commensurate with safe driving practices.
2. Improve equipment utilization. In the short term, vehicle productivity can be improved by minimizing down time and delaying routine maintenance.
3. Ship only full-pallet loads and full truck loads. In time of emergency, brand sensitivity is not likely to exist among customers. Hence loading orders should be written in terms of full-pallet loads, and all trucks should be loaded to capacity.
4. Ship only necessary commodities. Attachment 2 contains suggested shipping guidelines for reducing non-essential shipments under crisis relocation conditions.
5. Obtain additional drivers and equipment. Even with the measures above, it is anticipated that additional transportation equipment and personnel will be needed to provide the required food distribution capability under crisis relocation conditions. Estimates of additional equipment required by each risk area distribution center appear in Attachment 1. At the start of the crisis relocation period, additional equipment and drivers will be made available to risk area distribution centers through the NDTA. Requests for more personnel and equipment should be submitted to the Colorado Food Agency, which will forward the request to the Emergency Resource Board.

ATTACHMENT 1
SUMMARY OF REVISED WHOLESALE-RETAIL DISTRIBUTION PATTERNS

DISTRIBUTION CENTER		NORMAL OPERATIONS				CRISIS RELOCATION OPERATIONS						
		TOTAL RETAIL OUTLETS SERVED	ESTIMATED VOLUME	TRANSPORTATION RESOURCES			CRP SHIPMENT REDIRECTION		TRANSPORTATION STRESS FACTOR	ESTIMATED ADDITIONAL RESOURCE REQUIREMENTS		
				Tractors	Trailers	Drivers	From Stores In These Counties	To Stores In These Counties		Tractors	Trailers	Drivers
SAFEWAY , Denver		150	837	180	350	200	Denver, Adams, Jefferson and Arapahoe	Bent, Clear Creek, Delta, Garfield, Mesa, Moffet, Montrose, and Routt	2.72	49	95	160
							El Paso	Alamosa, Chaffee, Fremont, Gunnison, La Plata				
							Pueblo, Boulder	Huerfano, Las Animas				
KING SOOPERS, Denver		31	405	50	100	60	Denver, Boulder, Jefferson, and Pueblo	King Soopers in Larimer, City Markets in Delta, Eagle, Garfield, Mesa, Moffet, Montrose, Proers and Routt	7.45*	65	125	120
							El Paso	City Markets in La Plata				
ASSOCIATED GROCERS, Denver		553	454	76	80	87	Denver, Adams, Arapahoe, Jefferson	Independent Out-lets in All Denver Host Counties	2.38	--	---	69
Denver & Pueblo							Boulder	Independent Out-lets in Boulder Host Counties				
							El Paso	Independent Out-lets in All Colorado Springs Host Counties	1.46	--	---	--
Pueblo		148	124	29	38	29	Pueblo	Independent Out-lets in All Pueblo Host Counties				

* Stress factor reflects additional travel distance for entire Dillon Company.

DISTRIBUTION CENTER LOCATION	TOTAL RETAIL OUTLETS SERVED	ESTIMATED VOLUME	TRANSPORTATION RESOURCES			CRP SHIPMENT REDIRECTION		TRANSPORTATION STRESS FACTOR	ESTIMATED ADDITIONAL RESOURCE REQUIREMENTS		
			Tractors	Trailers	Drivers	From Stores In These Counties	To Stores In These Counties		Tractors	Trailers	Drivers
NATIONAL TEA COMPANY, Denver	33	104	30	32	33	Denver, Boulder, Adams, Arapahoe, Jefferson	Mass feeding centers in Denver, Boulder Host Counties	3.83	24	26	51
						El Paso	Mass feeding centers in Colorado Springs Host Counties				
						Pueblo	Mass feeding centers in Pueblo Host Counties				
NOBEL FOODS, Denver	NA	100	50	50	60	Boulder, Denver, Adams, Arapahoe, Jefferson	Restaurants & Institutions in Denver, Bould Host Counties	2.72	14	14	48
						El Paso	Restaurants & Institutions in Colorado Springs Host Counties				
						Pueblo	Restaurants & Institutions in Pueblo Host Counties				
CITY MARKETS, Grand Junction	19	NA	NA	NA	NA	Follow pre-crisis distribution patterns expanding operations as necessary to deliver King Soopers Products		3.31*	10	20	17
TOTAL ESTIMATED ADDITIONAL RESOURCES: 162									280	465	

* Stress factor reflects additional travel distance for entire Dillon Company.

ATTACHMENT 2

SUGGESTED SHIPPING GUIDELINES FOR WHOLESALERS
SUPPLYING HOST AREA RETAIL OUTLETS

CATEGORY	SHIP	RETAIN
Meat	All items	
Produce	All items	
Dairy products	All items	
Frozen foods	All items, as host area storage space permits	
Bakery goods	All items	
Dry groceries	Baby Foods; Baking Mixes; Baking Needs; Candy; Cereals; Cocoa; Condiments; Cookies; Crackers & Bread Products; Desserts; Diet Foods; Fish (Canned & Dried); Household Cleaning Compounds; Jams, Jellies & Spreads; Juices & Juice Drinks; Laundry Supplies; Macaroni Products; Meat Products; Milk (Canned & Dried); Paper Products; Pet Foods; Prepared Foods; Salad Dressings; Salt, Seasonings; Shortenings & Oils; Soaps, Detergents & Disinfectants; Soup; Sugar; Syrups & Molasses; Vegetables (Canned & Dried).	Beer, Wine & Ale; Cigarettes; Gum; Household Supplies (Furniture Polish, Shoe Polish, Air Fresheners, Floor Wax); Snacks; Soft Drinks; Tea. (Note: If vehicle availability is not critical, certain of the above items (i.e., coffee, tea, soft drinks) may be shipped as morale boosters.)
General Merchandise	Batteries; Flashlights; Light Bulbs; Anti-Freeze; Motor Oil; Twine; Sponges; Brushes; Candles; Charcoal & Charcoal Lighters; Outdoor Equipment.	Stationery & School Supplies; Lighter Fluid; Turpentine; Housewares; Lighting Accessories; Sunglasses; Toys; Grass Seed; Pet Supplies; Soft Goods (Hosiery, Gloves, Etc.).
Health & Beauty Aids	Aspirin; Baby Needs; First Aid items; Oral Hygiene Products; Proprietary Remedies.	Cosmetics; Deodorants; Hair Care Needs; Shaving Needs; Skin Care Aids.

Appendix F. References

1. Defense Civil Preparedness Agency (DCPA), High Risk Areas for Civil Preparedness Nuclear Defense Planning Purposes (TR-82), US DOD, Wash. D.C., April 1975.
2. Disposition of Input Population with Blast and Fallout (Individual Computer Printouts for any State or States of Interest), DCPA/US DOD, Wash., D.C., (not dated).
3. Bureau of the Census, Publication PC (1)-A (For any State or States of Interest), US DOC, Wash., D.C., (various dates).
4. Bureau of the Census, Publication PCH (1), Census Tracts (For the SMSA's of Interest), US DOC, Wash., D.C., (various dates).
5. Bureau of the Census, Publication HC (1), Detailed Housing Characteristics (For the SMSA's of Interest), US DOC, Wash., D.C., (various dates).
6. DCPA, An Initial (Synoptic) Prototype State Crisis Relocation Plan (CPG-2-8-A-1), US DOD, Wash., D.C., Jan. 1976.
7. Billheimer, John W., et al., Food System Support of the Relocation Strategy, (Volume 1: Analysis and Case Study) CPG-2-8-1, DCPA/US DOD, Wash .D.C. Sept. 1975
8. Billheimer, John W., et al., Food System Support of the Relocation Strategy, (Volumes 2 & 3: Prototype Plans and Planning Guidelines, CPG-2-8-2, DCPA/US DOD Wash., D.C.
9. "Distribution Study of Grocery Store Sales," Supermarket News, Fairchild Publications, Inc., 7 East 12th St., N.Y., N.Y. 10003
10. Chain Store Guide, Business Guides, Inc., 2 Park Ave., N.Y., N.Y. 10016 (no date)
11. Billheimer, John W., et al., Impacts of the Crisis Relocation Strategy, on Transportation Systems, Systan, Inc., Los Altos, CA., March 1977 (CPG 2-8-12 and CPG 2-8-13)
12. Laney, M.N., et al., Management of Medical Problems Resulting from Population Relocation (vols. 1 & 2), Research Triangle Institute, Research Triangle Park, N.C., Sept 1976, (CPG 2-8-7 and CPG 2-8-8) & Berke, George B., & Elizabeth Robertson, Management of Medical Problems Resulting from Population Relocation (vol 3), American National Red Cross, Wash., D.C. Feb 1977 (CPG 2-8-11).

13. Daniel, Don O. et al, Prototype Plans for Production and maintenance of Electric Power in Crisis Relocation: Final Report, Defense Electric Power Administration, Department of the Interior, Wash., D.C. August 1975 (CPG 2-8-6).
14. Rosenthal, Murray & Leonard Farr, Direction and Control Communications to Support Crisis Relocation Planning: Final Report, Systems Development Corp., Santa Monica, CA. June 1976.
15. EMP Threat and Protection Measures, DCPA TR61, August 1970, EMP Protection for Emergency Operating Centers, DCPA TR-61A, May 1971; EMP Protection Systems, DCPA TR-61B, revised July 1972; and EMP Protection for AM Radio Broadcast Stations, DCPA TR-61C, May 1972.
16. Annual Progressive Grocers Marketing Guidebook
Progressive Grocer Co. 708 3rd Ave., New York, N.Y. 10017
17. "Chain Food Stores by Major Newspaper Market"
Media General Inc., Richmond, VA.

Appendix G. Bibliography

- CPG-2-8-11 Berke, George B. and Elizabeth Robertson, Management of Medical Problems Resulting from Population Relocation, "Guidance for Crisis Relocation Planners and General Population Handout," American National Red Cross for Defense Civil Preparedness Agency, Contract DCPA-01-74-C-0285, Research Triangle Park, North Carolina, 1976, Volume III, Part A.

This report, Volume III, is a follow-on to the Management of Medical Problems Resulting from Population Relocation, Volumes I and II and is in direct support to the prototype plans for State, risk and host jurisdictions as presented in Volume II, Part Three.

This report consists of two sections. Section One is "Guidance for Crisis Relocation Planners"; Section Two is "Sample General Population Handout."

- CPG-2-8-1 Billheimer, John W., J. Jones and M. Myers, Food System Support of the Relocation Strategy, "Part One: Analysis and Case Study," Systan, Inc. for Defense Civil Preparedness Agency, Contract DCPA-01-74-C-0267, Los Altos, California, 1975, Volume I.

Different alternatives for distributing food to evacuated populations under crisis relocation conditions are identified and evaluated. Food stocks in existing distribution channels are traced by magnitude and location, and potential system alternatives are examined. It appears that the most effective strategy for food distribution under evacuation conditions is to allow agriculture output and the major processing plants to follow normal distribution channels and to continue using wholesale warehouses in the evacuated area to serve retail outlets and mass feeding centers in outlying areas.

- CPG-2-8-2 Billheimer, John W., J. Jones and M. Myers, Food System Support of the Relocation Strategy, "Part Two: Prototype Plans and Part Three: Planning Guidelines," Systan, Inc. for Defense Civil Preparedness Agency, Contract DCPA-01-74-C-0267, Los Altos, California, 1975, Volume II.

This report deals with the food system aspects of crisis relocation planning. It provides sample food distribution system plans and guidelines for nuclear civil protection planners in developing crisis relocation plans.

- CPG-2-8-12 Billheimer, John W. Robert Bullemer, Arthur Simpson, Robert Wood, Impacts of the Crisis Relocation Strategy on Transportation Systems, “Analysis and Case Study,” Systan, Inc. for Defense Civil Preparedness Agency, Contract DCPA-01-75-C-0263, Los Altos, California, 1976, Volume I.

This study investigates alternative strategies for transporting people and critical commodities from areas of high risk in anticipation of a nuclear attack; develops prototype plans for the continued operation of the transportation system under conditions of crisis relocation; and formulates planning guidelines designed to enable local officials to plan the effective use of the transportation system in their jurisdiction under crisis conditions.

Volume I quantifies the impact of the CRP strategy upon all levels of the nation’s transportation system; analyzes the transportation requirements of the relocated population, critical industries, operating agencies and services, and host are life support facilities, and to investigate the means of fulfilling these requirements; investigates methods of upgrading transportation system performance under CRP conditions before, during and after the relocation; and assesses the potential impacts of transportation system degradation upon relocation feasibility.

- CPG-2-8-13 Billheimer, John W., Robert Bullemer, Arthur Simpson, Robert Wood, Impacts of the Crisis relocation Strategy on Transportation Systems, “Planning Guidelines,” Systan, Inc. for Defense Civil Preparedness Agency, Contract DCPA-01-75-C-0263, Los Altos, California, 1976, Volume II.

This section of the report is directed toward State and local official charged with the task of developing CRP’s for their jurisdictions. Guidelines are presented which will enable these officials to obtain the necessary data for planning and to formulate plans for the transport of people and critical cargo under crisis relocation conditions.

- CPG-2-8-13 Billheimer, John W., Robert Bullemer, Arthur Simpson, Robert Wood, Impacts of the Crisis Relocation Strategy on Transportation Systems, “Prototype Plans,” Systan, Inc. for Defense Civil Preparedness Agency, Contract DCPA-01-75-C-0263, Los Altos, California, 1976, Volume III.

This volume of the report presents a sample transportation annex for the State of Colorado Prototype Crisis Relocation Plan.

- CPG-2-8-5 Brown, William M., The Nuclear Crisis of 1979, for Defense Civil Preparedness Agency, Contract DCPA-01-75-C-0034, Washington, D.C., 1976.

This study depicts a sequence of hypothetical strategic events which create an intense nuclear crisis. A parallel sequence sketches U.S. civilian responses to these developments including, eventually, the ordering of a mass movement of the urban population into the less risky host areas. Some of the major problems anticipated for the planning of this civil defense option without increasing the current modest budget are discussed. A series of vignettes portrays an unfolding picture of the nuclear crisis, the mobilization which leads to the relocation of the population, the movement and the reception in the host areas, and the responses during a somewhat protracted evacuation.

- CPG-2-8-3 Chenault, William W., Cecil H. Davis and Karen Cole, Reception/Care Planning for Crisis Relocation, Human Sciences Research, Inc. for Defense Civil Preparedness Agency, Contract DCPA-01-74-C-0285, McLean, Virginia, 1976, Volume I.

This report includes: (1) a technical report, (2) a bibliography of selected publications relating to Reception/Care and CRP (3) a brief prototype R/C plan for a risk jurisdiction, (4) and illustrative prototype R/C plan for an evacuated organization, and (5) a recommended approach to R/C aspects of CRP. The report, approach, and planning materials strongly endorse and illustrate the concept of "organizational relocation," whereby entire risk area organizations--workers plus their dependents--would relocate to specific, predesignated host area R/C jurisdictions, organizational headquarters facilities, and congregate care and fallout shelter facilities.

- CPG-2-8-4 Chenault, William W., Cecil H. Davis and Karen Cole, Prototype Reception/Care Plan to Meet the Welfare, Shelter, and Related Needs of Populations Affected by Crisis Relocation, Human Sciences Research, Inc. for Defense Civil Preparedness Agency, Contract DCPA-01-74-C-0285, McLean, Virginia, 1976, Volume II.

This report, a companion piece to Reception/Care Planning for Crisis Relocation (CPG-2-8-3), is a detailed prototype Reception/Care plan for a host jurisdiction (in this case, for Fremont County, Colorado).

- CPG-2-8-14 Chenault, William W. and Cecil H. Davis, Reception and Care Planning Guidance For host Communities, "An overview of Reception/Care Planning and Training Guidance," Human Sciences Research, Inc for Defense Civil Preparedness Agency, Contract DCPA-01-75-C-0309,

McLean, Virginia, 1976, Volume I.

This document is Volume I of Reception and Care Planning Guidance for Host Communities, which describes Reception/Care planning steps, instructions for developing specific local (County-level) plans, and the detailed management structure of a local Reception/Care effort. This volume describes the numerous sections of the four volumes and recommends the “clustering” of various sections into ”modules” of training content geared to particular functions and audiences under “normal” or “crash” training conditions.

CPG-2-8-14

Chenault, William W. and Cecil H. Davis, Reception and Care Planning Guidance for Host Communities, “Planning Steps and Instructions, ” Human Sciences Research, Inc. for Defense Civil Preparedness Agency, Contract DCPA-01-75-C-0309, McLean, Virginia, 1976, Volume II.

This document is Volume II of Reception and Care Planning Guidance for Host Communities, which describes Reception/Care planning steps, instructions for developing specific local (County-level) plans, and the detailed management structure for a local Reception/Care effort. This Volume describes (1) a sequence of Planning Steps involved in preparing a host county plan and (2) detailed Planning Instructions for using the Planning Format contained in Volume III of this set of guidance materials. These Steps and Instructions are specifically cross-referenced to the Planning Format for Host counties, and are written for use either in on-site or more formal training contexts, or in operational settings.

CPG-2-8-14

Chenault, William W. and Cecil H. Davis, Reception and Care Planning Guidance for Host Communities, “Planning Format,” Human Sciences Research, Inc. for Defense Civil Preparedness Agency, Contract DCPA-01-75-C-0309, McLean, Virginia, 1976, Volume III.

This document is Volume III of Reception and Care Planning Guidance for Host Communities, which describes Reception/Care planning steps, instructions for developing specific local (County-level) plans, and the detailed management structure for a local Reception/Care effort. This volume constitutes the recommended format for host county Reception/Care plans, and is designed to minimize the effort required to formulate such plans at the local level. The volume contains one copy of virtually every form that would be required to complete a host county plan in most circumstances, and is compatible in organization and terminology with the companion volumes in the set, which describe planning steps, provide detailed instructions for utilizing this planning format, and describe the organizational structure and specific jobs in a host county Reception/Care service. This volume, like others in the set, is designed in “modular” form to facilitate its use in training Reception/Care personnel at various levels and in diverse training contexts.

CPG-2-8-15

Chenault, William W. and Cecil H. Davis, Reception and Care Planning Guidance for Host Communities, "Tables of Organization Staff Responsibilities," Human Sciences Research, Inc. for Defense Civil Preparedness Agency, Contract DCPA-01-75-C-0309, McLean, Virginia, 1976, Volume IV.

This document is Volume IV of Reception and Care Planning Guidance for Host Communities, which describes Reception/Care planning steps, instructions for developing specific local (County-level) plans, and the detailed management structure for a local Reception/Care effort. This volume provides (I) Tables of Organization for all elements of a host area Reception/Care Service, (II) job descriptions for each of 66 personnel positions normally found in a local organization, (III) a cross-reference list relating job descriptions to organizational charts, and (IV) a listing of personnel positions included in each of five (successively more complete) levels of staffing.

Tables of Organization and job descriptions are clustered in ten modules, corresponding to organizational elements, which may be used separately for planning or training purposes, and each job description may be reproduced separately for use in orientation, training, or operations.

Christiansen, John R., Field Testing Procedures for Using Home Basement Shelters as Group Shelters, Brigham Young University for Defense Civil Preparedness Agency, Contract DCPA-01-74-C-0305, Provo, Utah, 1975.

During 1974-75, a field-test of home basement sharing programs was conducted in three place in Colorado designated as host areas. A total of 4,779 households were contacted in four different ways using the mail and personal interviews. Major results of this field-test were: (1) procedures used in the field-test had a marked impact in modifying emergency plans of citizens; (2) most households within suitable basements agreed to use and share their basements with both local and relocated persons in emergencies; (3) recruitment and training procedures for civil defense volunteers provided adequate personnel for large-scale civil defense efforts; (4) citizens were grateful to officials for informing them about the suitability of their homes as shelters and the proper actions to take in emergencies.

CPG-2-8-6

Daniel, Don O. and Joseph E. Minor, Prototype Plans for Production and Maintenance of Electric Power in Crisis Relocation, U.S. Department of the Interior, Defense Electric Power Administration for Defense Civil Preparedness Agency, Contract DCPA-01-74-C-0336, Washington, D.C., 1975.

This report is presented in 3 major parts; (1) prototype plans for the production and maintenance of electric power service during

crisis relocation (2) guidance for applying analysis methodology elsewhere, and (3) a detailed study and analysis report. The prototype plans part if the report includes plans for the Colorado Springs Municipal System (risk areas); plans for typical investor-owned companies, municipal systems, and electric associations (host areas); and an outline of an electric power appendix to the State Plan for Colorado. The part of the report which pertains to guidance for application of the methodology can be applied elsewhere.

Farace, Richard V., Communication Strategy in Crisis Relocation Planning, Michigan State University for Defense Civil Preparedness Agency, Contract DCPA-01-74-C-0283, East Lansing, Michigan, 1975.

Key propositions on communication and organizing in crisis situations are presented, and an evaluation procedure for assessing Crisis Relocation Plans is given. The various CRP audiences are described, and strategies for communicating with them are described. A model of CRP communication is outlined.

Farr, Leonard, Murray Rosenthal and Samuel Weems, Public Communications to Support Crisis Relocation Planning, System Development Corporation for Defense Civil Preparedness Agency, Contract DCPA-01-74-6-0284, Santa Monica, California, 1975.

Final report of a project to develop a prototype plan for public communications to support Crisis Relocation Planning. Report includes a review of the literature related to communications involved in large-scale evacuations, formulation of communications requirements for CRP, and selection of appropriate public communications media. (Public communications media include radio, television, newspapers, handouts, and special purpose emergency information centers.) Attached to the research report is a public communications plan. The content of the public information to be communicated is not included in this report.

Gilmer, R.W. and C. Kennedy, The Potential for Relocation of Population under Threat of a Nuclear Attack, Institute for Defense Analyses for Defense Civil Preparedness Agency, Contract DCPA-01-75-C-0009, Arlington, Virginia, 1976.

This paper examines areas in New York and Texas to test whether evacuation in these areas to protect the population from the effects of blast and fallout during a possible nuclear attack is feasible. Potential problems exist in New York and Texas concerning the availability of fallout shelter protection, with congregate care facilities posing a lesser problem. Few generalizations were available-even from an examination of only two areas.

Haaland, Carsten M., Conrad V. Chester and Eugene P. Wigner, Survival of the Relocated Population of the U.S. after a Nuclear Attack, Oak Ridge National Laboratory for Defense Civil Preparedness Agency, Contract DCPA-01-74-C-0227, Oak Ridge, Tennessee, 1976.

At least 190 million Americans would survive a nuclear attack of 6600 megatons (1444 weapons, current Soviet capability) if 90 million were evacuated from high risk areas during the crisis period preceding the attack. This report presents solutions to problems of continuing surviving population of the U.S. in the face of threats from postattack food shortages and fallout radiation hazards. Reserves of food, transportation capacity, and fuel would survive the attack to provide more than adequate capability to feed the entire population until the first harvest after the attack.

Harker, Robert A. and Charlie C. Colman, Application of Simulation Exercises to Crisis Relocation Planning, Center for Planning and Research, Inc. for Defense Civil Preparedness Agency, Contract DCPA-01-74-C-0313, Palo Alto, California, 1975.

This research was conducted to assist DCPA in the adaptation of its simulation exercise to incorporate relocation planning guidance materials and computerized scenario capabilities into the on-site assistance program. Scenarios were developed for both nuclear confrontation and earthquake prediction situations. The scenarios were used in a pretest and six workshop exercises with local government officials in the San Francisco Bay Area.

CPG-2-8-9

Harvey, Ernest C. and Robert W. Hubenette, Alternative Hosting and Protective Measures, Stanford Research Institute for Defense Civil Preparedness Agency, Contract DAHC-20-68-C-0105, Menlo Park, California, 1968.

This report investigates the ability of outlying areas to host evacuated populations from risk areas. It (1) estimates the support and protective capabilities of host areas based on readily available data and checked by means of sampling; (2) assesses the extent to which these results can be applied to other metropolitan areas; and (3) describes the survey and analysis techniques required to assess support and protective capabilities in other metropolitan areas.

Hubenette, Robert W., Guide for Crisis Relocation Contingency Planning, JHK & Associates for Defense Civil Preparedness Agency, San Francisco, California, 1974.

This was the first guide to provide Nuclear Civil Protection planners with an understanding of the concept of contingency planning for crisis relocation and the techniques needed to undertake such planning.

Kearney, Cresson E., Expedient Shelter Construction and Occupancy Requirements, Oak Ridge National Laboratory for the Energy Research and Development Administration, Contract W-7405-eng-26, Oak Ridge, Tennessee, 1976.

This report strongly indicates the practicality of tens of millions of Americans evacuating into rural areas and building and occupying high protection factor expedient shelter during an escalating international crisis. This concept was successfully tested by untrained families who built expedient shelters.

CPG-2-8-7

Laney, M.N., P.F. Giles, D.R. Johnston and E.L. Hill, Management of Medical Problems Resulting from Population Relocation, Research Triangle Institute for Defense Civil Preparedness Agency, Research Triangle Park, North Carolina, 1976, Volume I.

This report consists of 3 volumes. Volume I contains an analytical report which provides a medical profile of the United States identifying the day-to-day health and medical (h/m) problems of the population, examining the h/m problems might be expected to result from population, relocation, setting forth essential h/m functions for crisis relocation, and discussing resources and systems to meet h/m needs during a relocation period.

CPG-2-8-8

Laney, M.N., P.F. Giles, D.R. Johnston and E.L. Hill, Management of Medical Problems Resulting from Population Relocation, Research Triangle Institute for Defense Civil Preparedness Agency, Research Triangle Park, North Carolina, 1976, Volume II.

This volume, II, identifies the general requirements for h/m services during crisis relocation, presents alternatives solutions for the planner's consideration and includes selected planning aids. It also includes h/m annexes to CRP's for the State of Colorado, El Paso Co.-Colorado Springs, and Fremont Co., State, risk and host jurisdictions, respectively.

CPG-2-8-10

Nehnevajsa, Jiri, Home Basement Sharing: An Analysis and a Possible Approach to Planning, University of Pittsburgh, Center for Urban Research for Defense Civil Preparedness Agency, Contract DCPA-01-74-C-0278, Pittsburgh, Pennsylvania, 1976.

Home basement sharing is one of the ways which whatever shelter deficits might be partially overcome. This study considers the extent to which home basement sharing might be feasible, and the degree to which a program of this kind would contribute to the protection of our people against nuclear hazards. Tentative approaches to home basement sharing planning are developed on the premise that the population might be protected "in-place" or upon "relocation" and that basement sharing plans might be developed under "normalcy conditions" or under "crisis conditions." The study arrives at programmatic recommendations as to how such planning could be accomplished should the nation choose to consider the incorporation of private basements into the national shelter system on a voluntary basis.

Rosenthal, Murray and Leonard Farr, Direction and Control to Support Crisis Relocation Planning, System Development Corporation for Defense Civil Preparedness Agency, Contract DCPA-01-74-C-0284, Santa Monica, California, 1976.

This is the final report of a project to plan for direction and control communications to support crisis relocation planning. The report includes a review of the literature related to CRP, operational communications, and DCPA guidance for communications planning; formulation of communications requirements for CRP; development and testing of prototype communications plans for a selected risk area (Colorado Springs – El Paso County), host area, (Fremont County), and State (Colorado); and (4) preparation of planning guidance for CRP direction and control Communications, which can be applied to risk and host areas and to States throughout the nation. Included as appendices to the research report are the required prototype plans and planning guide.

CPG-2-8-16 Ryland, Harvey G. and Robert B. Enns, Public Safety Support of the Crisis Relocation Strategy, Mission Research Corporation for Defense Civil Preparedness Agency, Contract DCPA-01-74-C-0281, Santa Barbara, California, 1976.

This report presents the results of a study of the role of public safety agencies (law enforcement, fire protection, and rescue--medical services) in support of the relocation of civilians in a crisis situation. Hypothetical, but realistic, scenarios are presented for the three phases of the relocation operation--relocation, attack and return (no attack). Based on these scenarios -- functions, operations procedures, resource requirements, and management and coordination tasks are defined for the individual public safety agencies in both the risk and host areas.

Sachs, Abner, Maria del Sort and Sheila Delach, Guide for Evacuation Jurisdiction – Crisis Relocation Contingency Planning, Science Applications, Inc. for Defense Civil Preparedness Agency, Washington, D.C., 1975, Volume I.

This handbook presents guidelines for developing plans for the crisis relocation of population under threat of nuclear attack. Directed toward the individual in charge of civil defense planning at the local level, this handbook is intended to provide basic information which should assist the local civil defense planner in developing his own plans, staff, and supervision during an evacuation.

Sachs, Abner and Shelia Delach, Guide for Host Jurisdiction – Crisis Relocation Contingency Planning, Science Applications, Inc. for Defense Civil Preparedness Agency, Washington, D.C., 1975, Volume II.

This handbook presents guidelines for developing plans for the crisis relocation of population under threat of nuclear attack. Directed toward the individual in charge of civil defense planning at the local level, the handbook is intended to provide basic information which should assist the local civil defense planner in developing his own plans, staff and supervision during an evacuation.

Sachs, Abner, Fallout Protection in Host Areas, Science Applications, Inc. For Defense Civil Preparedness Agency, Washington, D.C., 1975, Volume III.

This manual describes the methods for construction of all except hasty or improvised shelter which is covered in other DCPA publications. New expedient shelter is defined as that which is planned before the crisis and constructed according to prior designs during the crisis. It can be fully buried or constructed entirely above ground.

Schmidt, Leo A., Interactive ADAGIO Computer Program as an Aid to Crisis Relocation, Institute for defense Analyses for Defense Civil Preparedness Agency, Contract DCPA-01-75-C-0009, Arlington, Virginia, 1975.

The ADAGIO computer program was developed to provide an initial allocation of population from evacuation centers to reception centers in planning for the relocation of population away from risk under an imminent threat of nuclear attack. A modification of this computer program is described which allows for interactive adjustments at a time-sharing computer terminal of initial allocation based on user judgments. Operating instructions and examples of output are presented. The general context of possible ADP needs in this type of planning activity is discussed.

Strope, Walmer E., Clark D. Henderson and Charles T. Rainey, The Feasibility of Crisis Relocation in the Northeast Corridor, Stanford Research Institute for Defense Civil Preparedness Agency, Contract DCPA-01-75-C-0280, Menlo Park, California, 1976.

This report analyzes the problems of crisis relocation of risk area populations within the States comprising the so-called Northeast Corridor. It evaluates trade-offs and mixed options or alternatives and concludes with a "best solution" to the problems of a crisis relocation of this area.

CPG-2-8-A

Strope, Walmer E., Guide for Crisis Relocation Contingency Planning, "Part I: State- and Regional-Level Planning," Stanford Research Institute for Defense Civil Preparedness Agency, Menlo Park, California, 1976.

This publication deals with the preparation of the overall State plan for crisis relocation. It includes the designation of high risk areas and low risk areas which provides the basic framework within the later allocation planning will be done. The State plan also prescribes how food, electricity and other essentials will be provided to the enlarged population in the host area after relocation. An important result of this planning is a determination of what facilities and organizations in the risk areas must be kept in operation to support the relocation population.

- CPG-2-8-A-1 Strobe, Walmer E., Guide for Crisis Relocation Contingency Planning, “An Initial (Synoptic) Prototype State Crisis Relocation Plans,” Stanford Research Institute for Defense Civil Preparedness Agency, Menlo Park, California, 1976.

This prototype plan (based on the geography, political organization, and attack threat in Colorado) is intended to be illustrative of the organization and content of a CRP for any State. The prototype is exhibited in complete form only to the extent necessary to satisfy the illustrative requirement. Elsewhere, it is synopsized or covered by analogy to illustrated parts.

- CPG-2-8-B Strobe, Walmer E., Guide for Crisis Relocation Contingency Planning, “Part II: Allocation and Emergency Public Information,” Stanford Research Institute for Defense Civil Preparedness Agency, Menlo Park, California, 1976.

The guidance deals with the allocation of a risk area population to appropriate locations in the host area that has already been assigned in the State and Regional plan. The allocation process includes specific consideration of dependent segments of the population (e.g., the institutionalized, essential industry employees, etc.). The allocation phase of planning is also to develop emergency information materials for the public. Results from Part II planning will be used in subsequent stages of CRP planning.

- CRP-2-8-C Strobe, Walmer E., Guide for Crisis Relocation Contingency Planning, “Part III: Host Area Planning,” Stanford Research Institute for Defense Civil Preparedness Agency, Menlo Park, California, 1976.

Part III of the planning process involves the development of operations plans in host jurisdictions for the reception and care of risk area groups and families assigned and for the control of relocation movements in and through the jurisdiction.

- CPG-2-8-C-1 Strobe, Walmer E., Guide for Crisis Relocation Contingency Planning, “Prototype Crisis Relocation Plan for Fremont County,” Stanford Research Institute for Defense Civil Preparedness Agency, Menlo Park, California, 1976.

This prototype plan (based on the geography, political organization, and attack threat in Colorado) is illustrative of the organization and content of the host area part of the Crisis Relocation Plan for any State. The prototype is exhibited in complete form only to the extent necessary to satisfy the illustrative requirement. Elsewhere it is synopsized or covered by analogy to illustrated parts.

- CPG-2-8-D Strobe, Walmer E., Guide for Crisis Relocation Contingency Planning, “Part IV: Risk Area Planning,” Stanford Research Institute for Defense Civil Preparedness Agency, Menlo Park, California, 1976.

This document concerns the development of crisis relocation operations plans for areas at risk to the direct effects of nuclear weapons. It describes the planning procedure to be carried out after allocation planning has been accomplished.

- CPG-2-8-D-1 Strobe, Walmer E. and Betty J. Neitzel, Guide for Crisis Relocation Contingency Planning, “A Prototype Risk Area Plan,” Stanford Research Institute for Defense Civil Preparedness Agency, Menlo Park, California, 1976.

This prototype plan is illustrative of the organization and content of the risk area part of a State Crisis Relocation Plan.

- CPG-2-8-E Strobe, Walmer E., Guide for Crisis Relocation Contingency Planning, “Part V: Organizational Planning for Crisis Relocation Planning,” Stanford Research Institute for Defense Civil Preparedness Agency, Menlo Park, California, 1976.

This publication is a planning guide for those organizations which have a special role in the success of a crisis relocation. Continued functioning of many organizations, public and private, will be needed if essential defense activities are to continue during the period of relocation and it is the management of these organizations that this document is addressed.

System Development Corporation, Guide for Crisis Relocation Contingency Planning, prepares for Defense Civil Preparedness Agency, Contract DCPA-01-74-C-0214, Santa Monica, California, 1975.

This report updates “Mark I” information contained in the original Guide for Crisis Relocation Contingency Planning (JHK &

Associates, 1974) as a result of experiences gained in the nine prototype CRP projects. This reissue introduces "Mark II" planning aspects, based on a review and analysis of State Operational Survival Plans (OSPs) of the late 1950's; guidance developed for the OSP's; past research in crisis relocation as a planning option; current State emergency resource management plans, emergency highway traffic regulations (EHTR's), and other State disaster plans; and, to a limit extent the results of then current DCPA research.

White, W.L., Crisis Relocation Planning - Host Area Survey Analysis, Stanford Research Institute for Defense Civil Preparedness Agency, Contract DCPA-01-74-C-0293, Menlo Park, California, 1975.

The 1974 Host Area Surveys conducted in nine pilot areas for Crisis Relocation Planning were analyzed with the objective of developing a method predict the number of spaces that will be available for congregate care in buildings in the host areas. The 1974 Host Area Surveys were adequate for on-site planning in the pilot areas. No adequate predictive method is available as yet. Constraints on housing facilities are analyzed. Suggestions are made for survey management and for preference ordering housing.

Wright, M.D., E.L. Hill, J.S. McKnight and S.B. York III, Mine Lighting and Ventilation in Crisis, Research Triangle Institute for Defense Civil Preparedness Agency, Contract DCPA-01-74-C-0266, Research Triangle Park, North Carolina, 1975.

This report describes an investigation into the feasibility of providing lighting and ventilation in underground mines in a short period of time using locally available materials and equipment. The investigation consisted of the design and construction of pilot model of lighting and ventilation systems in an inactive limestone mine in Kansas City, Missouri. As a result of the pilot model construction, it was concluded that underground mines can upgrade in the amount of time normally considered as being available in a crisis relocation situation.

CPG-2-8-9

York, A.B. III, M.D. Wright and E.L. Hill, Alternative Ways of Providing Fallout Protection, Research Triangle Institute for Defense Civil Preparedness Agency, Contract DCPA-01-74-C-0270, Research Triangle Park, North Carolina, 1975.

This report describes an analysis of the various host area fallout shelter options currently being considered for implementation in a nuclear crisis situation. The cost effectiveness and

feasibility of different combinations of shelters were examined under various soil and water table conditions and availabilities of resources. These parameters characterize host areas in different geographical regions of the country.

As a final stage of the research, a host area shelter planning guide was developed. This guide presents a step-by-step procedure to be followed by the local planner in choosing shelter options to utilize in a particular area.

Appendix H
STATE LEVEL CRISIS RELOCATION PLANNING GUIDANCE
CHECKLIST

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CHECKLIST FOR PERFORMING AND REVIEWING STATE AND REGIONAL LEVEL CRISIS RELOCATION PLANNING

PURPOSE

This checklist is intended to assist State and Regional planners in three ways:

1. To provide a device for indicating who is responsible for performing each of the crisis relocation planning activities.
2. To serve as a common reference to ensure that each of the crisis relocation planning elements has been covered in the documented crisis relocation plan.
3. To aid planners in performing an initial review of the crisis relocation plan and periodic reviews in the future.

This checklist is intended to complement the crisis relocation planning guidance, and in no way should it be considered as a substitute for the more detailed guidance that precedes the checklist.

In the column labeled **PLANNING RESPONSIBILITY** enter the name and/or title of the person(s) responsibilities for performing each of the crisis relocation planning activities. This planning should include the preparation of statements/discussions on each of the planning elements.

In the column labeled **PLAN REFERENCE** enter the number and/or title of the section of the documented crisis relocation plan in which each planning element is contained (only where the item is actually covered in the plan).

RELATIONSHIP TO NUCLEAR CIVIL PROTECTION (NCP) PLANNING

Crisis relocation is one of two options included in the Nuclear Civil Protection (NCP) plan -- the other option being protection of the population in-place, at or near their places of residence.

Since crisis relocation planning is really a part of the larger NCP plan, and Emergency Operations Plan, planners may wish to consider two alternatives in performing the crisis relocation planning:

1. Prepare a Basic Plan that is specifically related to the Crisis Relocation Plan, or
2. Use the same Basic Plan prepared for the more comprehensive Emergency Operations Plan, thus using the Basic Plan as an “umbrella” for all emergency planning.

Regardless of the alternative selected, some specific elements of a “typical” Basic Plan should also be included as part of the Crisis Relocation Plan. This is due to the fact that some planning requirements will vary from one type of emergency to another and there are different requirements for different strategies/options. For example, there are considerable differences between planning for crisis relocation and planning for in-place protection. Therefore, as a minimum, it is suggested that the following Basic Plan elements be repeated in more specific terms in the Crisis Relocation Plan:

- Situation and Assumptions
- Concept of Operations
- Emergency Organization
- Direction and Control

Preferences regarding how the Crisis Relocation Plan is to be organized will most likely vary from State to State. Some planners may wish to organize the plan (e.g., annexes) by department or agency (i.e., police, fire, public works, etc.), while others may wish to organize the plan by function (i.e., communications, RADEF, shelter, etc.). Still others may prefer a cross-reference using both methods. The primary concern, regardless of how the documented plan is organized, is to ensure that all relevant planning elements (based on the guidance) are adequately covered in the plan. Those checklist items that are accompanied by an asterisk (*) should be covered specifically in the documented emergency operations plan and are intended to facilitate the review of the plan.

I-A. POLICY AND PLANNING CONSIDERATIONS

PLANNING OBJECTIVE

To ensure that policies and planning relevant to crisis relocation are described in the documented crisis relocation plan. These planning elements should include authorities and responsibilities for performing each crisis relocation-related operation.

CHECKLIST

	PLANNING RESPONSIBILITY	PLAN REFERENCE
*1. Indicate who is authorized and responsible for initiating crisis relocation. Also be certain to cite the basic of this authority (e.g., specific legislation).		
*2. Indicate whether crisis relocation would be directed and compelled by, e.g., the Governor upon receipt of a request to do so from the President. If such provisions are the result of State legislation, be certain to cite the law.		

	PLANNING RESPONSIBILITIES	PLAN RESOURCES
*3. Describe the hosting policies and constraints upon which the State's crisis relocation plan is based		
*4. Specify the anticipated movement time and relocation duration involved. Also indicate the transportation modes planned to be used, i.e., the transportation policy.		
*5. Describe the essential support activities to be planned for. Those should include:		
<ul style="list-style-type: none"> Those activities required to maintain essential services in support of the relocated population 		
<ul style="list-style-type: none"> Those defense-related activities that may be required for support of urgent national security objectives, including mobilization 		
<ul style="list-style-type: none"> Locally essential activities to maintain security in the risk area and to support those risk area residents who cannot be moved for various reasons and those who refuse to leave. 		
6. Describe the relocation assignment principles, being certain to take into account the principles of:		
<ul style="list-style-type: none"> Equal travel requirements 		
<ul style="list-style-type: none"> Use of host jurisdiction in a balanced fashion 		
<ul style="list-style-type: none"> Use of non-residential and residential structures. 		
*7. Describe the policy on the utilization of State and Federal employees in the performance of emergency duties.		
*8. Describe the current economic policies of the government for dealing with problems associated with economic dislocations affecting both relocated families and host area families.		

I-B. DEFINING THE RISK AREAS TO BE EVACUSTED

PLANNING OBJECTIVE

To provide a basis for developing crisis relocation plans based upon an identification of risk area boundaries, and to lay the foundation for later preparing detailed assignments of risk area residents to host counties while also describing boundaries that would seem reasonable to the ordinary resident.

CHECKLIST

	PLANNING RESPONSIBILITY	PLAN REFERENCE
*1. Identify all risk areas within the State, using TR-82 (item 1 of the data package) as an information/risk source.		
*2. Based on the risk areas identified, define the risk area boundaries (making adjustments as necessary).		
*3. Prepare a map defining the boundaries of the risk area(s) throughout the State.		
4. Prepare a table detailing the risk area population by tract.		

I-C PRELIMINARY ALLOCATION OF HOSTING AREAS

PLANNING OBJECTIVES

To lay the groundwork for later preparing detailed plans for hosting the risk area population in lower-risk jurisdictions.

CHECKLIST

	PLANNING RESPONSIBILITY	PLAN REFERENCE
1. Develop <u>preliminary</u> host area allocations, using an estimated hosting ratio within the State, based on 1970 census data.		
2. Perform an access evaluation to determine if it is physically possible to travel from the risk area to all inhabited areas of the designated host counties.		
3. Perform an evaluation of host area housing capacity. Evaluations should be made of water supplies, sewerage capabilities, and housing space. Also identify the per capita housing ratio.		
4. Conduct a preliminary review of available fallout shelter for both relocatees and host county residents.		
5. Identify additional indicators of the inherent capabilities of the host counties.		
*6. Make adjustments to preliminary host area allocations, and list the host areas.		

H-8

I-D. PRELIMINARY ASSIGNMENT OF RISK AREA POPULATION

PLANNING OBJECTIVE

To provide initial population assignments by geographical sector and/or essential industries/services to host areas. This assignment will provide a rudimentary capability for crisis evacuation and will be the basis for the detailed planning for risk and host area operations.

CHECKLIST

	PLANNING RESPONSIBILITY	PLAN REFERENCE
1. Identify the essential industries/services to be continued in operation after the relocation of the risk area population.		
2. Determine whether special planning consideration should be given to military dependents.		
3. Select assignment technique to be used.		
4. Conduct initial assignment of traffic to routes to host area.		
*5. Develop maps of risk area indicating geographical segments to each host area.		

I-E. ESSENTIAL ELEMENTS OF THE STATE PLAN

PLANNING OBJECTIVE

To describe the general form and content of the State plan for crisis relocation, to present basic principles that should be followed, and to relate the State Crisis Relocation Plan to other State emergency plans.

CHECKLIST

	PLANNING RESPONSIBILITY	PLAN REFERENCE
*1. Identify and describe the mission of the State government in crisis relocation. In some instances this may have already been stated in the overall emergency operating Basic Plan; however, it is suggested that details specifically relevant to crisis relocation be provided in the crisis relocation plan.		
*2. Plan for crisis relocation operations in support of local governments in the State. This should include such things as who, what and how. Two kinds of operations are involved-- the employment of State forces in direct support of local operations and providing resources support.		
a. Direct operational support. This includes assignment of State forces to assist in conducting the relocation operations.		
b. Planning for resources support activities. This includes support through the control and expediting of production, distribution, and use of essential goods and services. The kinds of goods and services to be supplied must be identified, along with the organizational arrangement and the operations to be performed.		
*3. Prepare a list of essential supplies and services for crisis relocation.		
*4. Identify the supply and distribution system to be used in providing essential goods and services (resource support).		

	PLANNING RESPONSIBILITY	PLAN REFERENCE
*5. Plan for resource support in the proper sequence as indicated below. (See Table 5-3 in the guidance.)		
a. Food		
b. Body protection and operations; housing and construction materials and equipment; general use supplies and equipment.		
c. Transportation; fuels		
d. Water supply and sewage treatment; sanitation and water supply materials; health supplies and equipment		
e. Electric power		
f. Direction and control		
g. Telecommunications		
5. Identify problems related to crisis relocation, devise solutions to these problems, and devise workable means of putting the solutions into effect.		
*7. Prepare an outline of the Crisis Relocation Plan and develop and document the plan based on the outline. The particular approach to organizing emergency operations plans (including the CRP) will likely vary from State to State. However, the items below should be covered (somewhere in the emergency plan) as they directly relate to crisis relocation planning.		
a. The State's crisis relocation mission.		
b. Situation and assumptions		
c. Concept of operations		

	PLANNING RESPONSIBILITY	PLAN REFERENCE
d. Emergency organization		
e. Basis of authority for administration and logistics for direction and control.		
f. Annexes, such as direction and control; law and order; fire and rescue; health and medical; reception and care; resource and supply; food support; general supply support; transportation support; fuel support; health and medical support; water supply and sewerage support; electric power support; telecommunications support; and Appendices as required for each of the foregoing.		
*8. Be certain that the Crisis Relocation Plan contains the designations of risk and host areas and the assignments of risk area populations to host areas. Also be sure to include appropriate maps and listings.		
*9. Ensure that crisis relocation planning includes provisions for the judicial and legislative branches of State government.		

NOTE: It is recognized that specific Annexes and Appendices cannot be completed until planning is finalized for risk areas and host areas.

I-F PLANNING FOR FOOD SUPPORT

PLANNING OBJECTIVE

To plan for food support in a crisis relocation situation, based upon choices from among possible alternatives.

CHECKLIST

	PLANNING RESPONSIBILITY	PLAN REFERENCE
1. Perform an analysis of the crisis relocation food requirements. This consists of applying a use-rate to the number of people to be fed and the preparation of a table to include:		
a. County name		
b. Number of people		
c. Direct consumption		
d. Industrial support consumption		
e. Defense-related requirement (if there is a military post, base, etc.)		
f. Total requirement		
2. Analyze the existing food distribution system. This should include:		
a. Identification of annual production levels of key commodities within the State/Region		
b. Ascertaining the proportion of production destined for local markets		
c. Determining locations and capacities of significant storage facilities in the area.		

	PLANNING RESPONSIBILITY	PLAN REFERENCE
3. Analyze the warehousing subsystem. This should include receipt, storage, and issued carried on by independent food wholesalers, brokers, and the distribution centers of major grocery chains. See Table 5-2 (Required Data on Food Warehousing) in the guidance.		
4. Analyze the transportation subsystem. This should include the transportation equipment inventory and driver information.		
*5. Estimate transport equipment and personnel requirements.		
6. Estimate the transportation stress to evaluate alternative patterns of operation for the food distribution center.		
7. Perform an evaluation of alternatives.		
*8. Identify those food items that should be shipped and those that should not be shipped by wholesalers supplying host area retail outlets.		
*9. Prepare a plan for food support activities consisting of an organization plan and an operations plan.		
a. The organization plan should include the positions (do not include names of individuals), duties and authorities, channels of communication, food allocations and control, food industry operations, and direction and control.		
b. The operations plan should specify what operations are to be performed and under what circumstances, staffing(who will fill each position and who will succeed to it), information content and form, information source and destination and an information schedule.		

NOTE: DO NOT INCLUDE POSTION
DESCRIPTIONS OR SPECIFY ROUTINES.

I-G. PLANNING FOR TRANSPORTATION SUPPORT

PLANNING OBJECTIVE

To plan for the movement of people and goods after the relocation of the people to the host areas.

CHECKLIST

	PLANNING RESPONSIBILITY	PLAN REFERENCE
1. Analyze transportation requirements following the relocation of people to the host areas. This should include:		
a. Transportation needs of commuters		
b. Transportation of goods		
c. Transportation system stress		
2. Analyze transportation capabilities.		
*3. Identify those normal activities what will have to be continued through the crisis relocation and those normal activities that will be suspended for the duration of the crisis relocation period.		
4. Analyze requirements for State forces to be used in direct support.		
5. Analyze requirements for allocating available supplies of goods and services to essential uses.		
*6. Develop controls relevant to the use of essential resources either by obtaining the cooperation of the users or by direct rationing.		
*7. Develop "reasonable" controls or policies for controls regarding the use of transportation.		

	PLANNING RESPONSIBILITIES	PLAN REFERNECE
8. Summarize problem areas.		
9. Perform an evaluation of alternatives applicable to transportation support activities.		
*10. Prepare a plan for transportation support consisting of an organization plan and an operations plan.		
a. The organization plan should include the organizational element(s) involved, functions to be performed by the organizational element(s) involved, brief descriptions of duties of the positions directly involved in transportation support, assignments of authority to make decisions, lines of authority and channels of communication, and designation of crisis relocation operating site(s).		
b. The operations plan should specify what operations are to be performed and under what circumstances, staffing (who will fill each position and who will succeed to it), information content and form, information source and destination, and an information schedule.		

NOTE:DO NOT INCLUDE POSITION
DESCRIPTIONS OR SPECIFY ROUTINES.

I-H. PLANNING FOR FUEL SUPPORT

PLANNING OBJECTIVE

To plan for the use, distribution, etc. of four basic types of fuel during crisis relocation.

CHECKLIST

		PLANNING RESPONSIBILITY	PLAN REFERENCE
1.	Estimate the industrial demand for petroleum, the petroleum required for heating, and the petroleum required for automobiles.		
*2.	Identify those users who will be supplied with natural/manufactured gas during crisis relocation.		
*3.	Identify those facilities which will be kept operating and requiring gas during relocation.		
4.	Analyze the crisis relocation requirements for liquefied petroleum gas.		
5.	Analyze the crisis relocation requirements for solid fuels.		
*6.	Identify other fuel support emergency activities that would arise from a crisis relocation and would have to be provided by State government.		
*7.	Identify those normal activities that will have to be continued through the crisis relocation and those normal activities that will be suspended for the duration of the crisis relocation period.		
8.	Analyze requirements for State forces to be used in direct support and requirements for allocating available supplies of goods and services to essential uses.		

		PLANNING RESPONSIBILITY	PLAN REFERENCE
*9.	Develop controls relevant to the use of essential resources either by obtaining the cooperation of the users or by direct rationing.		
*10.	Develop “reasonable” controls or policies for controls regarding the use of fuel.		
*11.	Prepare a plan for fuel support consisting of an organization plan and an operations plan.		
	a. The organization plan should include the organizational element(s), functions to be performed, brief descriptions of duties of the positions directly involved in fuel support, assignments of authority, lines of authority and channels of communication, and designation of crisis relocation operating site(s).		
	b. The operations plan should specify what operations are to be performed and under what circumstances, staffing (who will fill each position and who will succeed to it), information content and form, information source and destination, and an information schedule.		

NOTE: DO NOT INCLUDE POSITION DESCRIPTIONS OR SPECIFY ROUTINES.

I-I.PLANNING FOR HEALTH SUPPORT

PLANNING OBJECTIVE

To plan for the crisis relocation needs of people relevant to safe food and water, sanitary living conditions, and medical care.

CHECKLIST

		PLANNING RESPONSIBILITY	PLAN REFERENCE
1.	Analyze requirements for maintaining the potability of the water supply.		
2.	Analyze sewage disposal requirements.		
*3.	Determine garbage and trash disposal requirements. This includes both transportation and disposition and should be reflected in State policy and guidance provided in the CRP.		
*4.	Identify crisis relocation requirements for vector controls.		
5.	Analyze requirements for State medical personnel.		
*6.	Identify requirements for State-operated or controlled medical facilities.		
*7.	Determine what State support is needed in making available health supplies and equipment.		
*8.	Identify other health emergency activities that would arise from a crisis relocation and would have to be provided by State government.		
*9.	Identify those normal activities that will have to be continued through the crisis relocation and those normal activities that will be suspended for the duration the crisis relocation.		

		PLANNING RESPONSIBILITY	PLAN REFERENCE
10.	Analyze requirements for State forces to be used in direct support and analyze requirements for allocating available supplies of goods and services to essential uses.		
*11.	Develop controls relevant to the use of essential resources.		
*12.	Prepare a plan for health support consisting of an organization plan and an operations plan.		
	a. The organization plan should include the organizational element(s), functions to be performed, brief descriptions of duties of the positions directly involved in health support, assignments of authority, lines of authority and channels of communication, and designation of crisis relocation operating site(s).		
	b. The operations plan should specify what operations are to be performed and under what circumstances, staffing (who will fill each position and who will succeed to it), information content and form, information source and destination, and an information schedule.		

NOTE: DO NOT INCLUDE POSTION DESCRIPTIONS OR SPECIFY ROUTINES.

I-J. PLANNING FOR ELECTRIC POWER SUPPORT

PLANNING OBJECTIVE

To plan for the generation and distribution of electrical power during crisis relocation.

CHECKLIST

		PLANNING RESPONSIBILITY	PLAN REFERENCE
1.	Analyze crisis relocation requirements for electrical power and check with power companies to determine if electric power requirements can be satisfied.		
*2.	Develop reasonable controls/policies regarding the use of electric power.		
*3.	Identify other electric power support emergency activities that would arise from a crisis relocation and would have to be provided by state government.		
*4.	Identify those normal activities that will have to be continued through the crisis relocation and those normal activities that will be suspended for the duration of the crisis relocation period.		
*5.	Analyze requirements for State forces to be used in direct support.		
6.	Analyze requirements for allocating available supplies of goods and services to essential uses.		
7.	Summarize problem areas.		
8.	Perform an evaluation of alternatives applicable to electric power support activities.		

PLANNING RESPONSIBILITY	PLAN REFERENCE
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- *9. Prepare a plan for electric power support consisting of an organization plan and an operations plan.
- The organization plan should include the organizational element (s) involved, functions to be performed by the organizational element (s) involved, brief descriptions of duties of the positions directly involved in electric power support, assignments of authority to make decisions, lines of authority and channels of communication, and designation of crisis relocation operating site (s).
 - The operations plan should specify what operations are to be performed and under what circumstances, staffing (who will fill each position and who will succeed to it), information content and form, information source and destination, and an information schedule.

NOTE: DO NOT INCLUDE POSITION DESCRIPTIONS OR SPECIFY ROUTINES.

I-K. PLANNING FOR DIRECTION AND CONTROL

PLANNING OBJECTIVES

To specify how the State government will function in a crisis relocation situation, including the activities that will be carried on, the overall organization, and the operations.

CHECKLIST

	PLANNING RESPONSIBILITY	PLAN REFERENCE
*1. Identify those persons to whom operational decisions are to be made known (i.e., recipients of decision results).		
2. Identify the kinds of operational decisions which can and should be made. This should take into account legal authorities, enforcement problems, etc.		
3. Based on the crisis relocation problems identified, devise a framework within which alternative solutions to problems can be devised.		
4. Identify the desired end results of analysis so that the analysis will permit problems to be identified.		
5. Identify the information requirements to permit the analysis to produce what it must.		
*6. Organize for direct support including the law and order service, fire and rescue service, health and medical service, reception and care service, and resource and supply service.		
*7. Organize for resource support including food, general supply, transportation, fuel, health, electric power, and telecommunications.		

		PLANNING RESPONSIBILITY	PLAN REFERENCE
*8.	Develop a State organizational staff consisting of information (to gather and assemble information); planning (to analyze information, identify problems, and devise alternative solutions); operations (to prepare the necessary instructions, directives, and operational orders required to make known the decisions made by the chief executive).		
*9.	Prepare an organization plan consisting of the following:		
	a. Statement of the functions to be preformed by the organizational elements (s) involved.		
	b. Identification of the elements of the part of the organization involved.		
	c. Brief descriptions of the duties of the positions directly involved in crisis relocation operations and their direction and control.		
	d. Assignments of authority to make decisions (i.e., specific decisions by specific positions).		
	e. Identification of lines of authority and channels of communication.		
	f. Designation of the crisis relocation operating site (s).		
*10.	Prepare an operations plan consisting of the following:		
	a. Brief descriptions of the crisis relocation operations to be performed and, for each, the circumstances under which it will be performed. Also included brief description of the normal operations to be continued, although not related to crisis relocation.		

	PLANNING RESPOSIBILITY	PLAN REFERENCE
b. A staffing plan to include:		
(1) Assignments of State agencies or parts of agencies to elements of the emergency organization and of individuals to positions, and lines of succession.		
(2) Identification of State agencies, or parts of agencies, that will continue to operate and the agencies, or parts of agencies, that will not.		
c. An information plan specifying items of information, information content and form, information source and destination, and an information/reporting schedule.		

I-L. PLANNING FOR TELECOMMUNICATIONS SUPPORT

PLANNING OBJECTIVE

To ensure the timely transmission of crisis relocation-related information within government (i.e., within the State organization, between the State and local governments, and among local governments); within and among the industrial elements; and to the public from both State and local governments.

CHECKLIST

	PLANNING RESPONSIBILITY	PLAN REFERENCE
1. Identify communications requirements between different operating levels (i.e., vertical communications requirements).		
2. Identify communications requirements between organizations and locations at the same level (i.e., lateral communications requirements).		
3. Identify private industry communications requirements for intra-industry, inter-industry, and between government and industry.		
*4. Identify public information requirements.		
*5. Prepare a plan for telecommunications support to include organization, deployment, and procedures.		

I-M. DOCUMENTATION OF PART I PLANNING

OBJECTIVE

To record the results of the work performed in producing the Part I planning in order to facilitate future efforts required to update the Crisis Relocation Plan.

CHECKLIST

	RESPONSIBILITY	DATE COMPLETED
1. Prepare a chronological account (in writing) of the planning process beginning with the input data package and the initiation conference within the state.		
2. Prepare an appendix to the report to include:		
a. The worksheets for the host area allocations.		
b. Descriptions of alternative allocations considered. (However, the rationale for the final allocations should be in the body of the report).		
3. Prepare a discussion of each support activity for which the plan was drawn. Be sure to record the alternatives that were considered and the rationale for the selection of those implemented in the plan.		
4. Prepare an appendix to item 3 above which contains:		
a. A list of conferences with State agencies and private companies		
b. Data sources and pertinent data		
c. Worksheets developed in the planning		

	RESPONSIBILITY	DATE COMPLETED
5. Prepare descriptions of the considerations entering into the preparation of emergency relocation instructions. This should include the status, if any, of planning for the broader public information activities of which the relocation instructions are but a part. (Note that examples of the standby hard copy for the general public and of the basic internal instructions for organizations may be placed in the appendix.)		

APPENDIX I

PLANNING FOR MILITARY PERSONNEL

Active duty military personnel are not under civilian authority with respect to crisis relocation and presumably will have their own instructions from their military commanders. Military dependents, however, have special problems that may deserve consideration in relocation plans. Since active duty military personnel, on the average, constitute less than one percent of the population of urbanized areas of the United States, in most risk areas the existence of the military and their dependants can be ignored in making the allocation. In some cases, however, military personnel and their dependents do constitute a substantial proportion of the risk area population and should be specifically accounted for.

Since most risk areas very nearly match the urbanized area; the planning team may use Table I-1 which lists urbanized areas in four categories according to the proportion of active duty military personnel in the total population. If the urbanized area of interest is listed in one of the first three categories of Table I-1, the procedures described in this Appendix should be used. If, however, the urbanized area of interest appears in the last category of the table or does not appear at all, use of the procedures are at the option of the planning team and the calculations and work sheet columns pertaining to military personnel and dependents can be skipped, if so decided. The guidance in this Appendix is written as if all calculations are to be made, however.

COUNTING PROCEDURE

1. To determine the number of active duty military personnel in each census tract, use Table P-3 of the tract book (Bureau of the Census publication, PHC (1), Census Tracts, for the SMSA of interest, or equivalent data in PC (1), -A, -B, and -C). Table I-2 is a reproduced page of this table from the Colorado Springs tract book. A sample work sheet (Table I-3) is provided to illustrate the counting procedure.

2. The calculation uses tract book data under the line heading, Employment Status. Note that the line items under this heading are divided into "Male, 16 years and over" and "Female, 16 years and over." Under each of these headings, the number on the line, Civilian Labor Force, should be subtracted from the number on the line, Labor Force, giving the number of active duty military personnel.

3. Numbers of male and female military personnel are then added together and the total entered under Column (3) of Sheet No. 1 opposite the appropriate tract number. Column (3) should be labeled "Active Military."

TABLE I-1

ACTIVE DUTY MILITARY PERSONNEL IN POPULATION
OF URBANIZED AREAS

Category 1:	Over 25 percent military (majority of population consists of military and dependents)		
	Fayetteville, NC Lawton, OK		
Category 2:	Between 10 and 25 percent military (one-third or more of population may be military and dependents)		
	Biloxi-Gulfport, MS Colorado Springs, CO Columbus, GA Norfolk-Portsmouth, VA Petersburg-Colonial Heights, VA Seaside-Monterey, CA Tacoma, WA Wichita Falls, TX		
Category 3:	Between 3 and 10 percent military (perhaps 10 to 30 percent of population will be military and dependents)		
	Abilene, TX	Huntsville, AL	Savannah, GA
	Albany, GA	Jacksonville, FL	Topeka, KS
	Charleston, SC	Newport News-Hampton, VA	
	Columbia, SC	Pensacola, FL	
	El Paso, TX	San Angelo, TX	
	Great Falls, MT	San Antonio, TX	
	Honolulu, HI	San Diego, CA	
Category 4:	Between 1.5 and 3 percent military (perhaps 5 to 10 percent of population are military and dependents)		
	Albuquerque, NM	Omaha, NE	Shreveport, LA
	Augusta, GA	Orlando, FL	Tampa, FL
	Austin, TX	Oxnard/Ventura/Oaks, CA	Tucson, AZ
	Corpus Christi, TX	Sacramento, CA	Utica-Rome, NY
	Laredo, TX	San Bernardino/Riverside, CA	
	Las Vegas, NV	Sherman/Denison, TX	Washington, DC
	Montgomery, AL		Wichita, KS

TABLE I-2

Table P-3. Labor Force Characteristics of the Population: 1970-Continued

(Data based on sample, see text. For minimum base for derived figures (percent, median, etc.) and meaning of symbols, see text)

Census Tracts	Balance of B. Paso County - Con.								Totals for split tracts							
	Tract 0041	Tract 0042	Tract 0043	Tract 0044	Tract 0045.01	Tract 0045.02	Tract 0045.03	Tract 0046	Tract 0001	Tract 0002	Tract 0003.01	Tract 0003.02	Tract 0004	Tract 0011.01	Tract 0011.02	Tract 0011.03
EMPLOYMENT STATUS																
Male, 16 years old and over	1 096	776	1 010	15 713	1 172	1 301	1 303	313	1 772	1 718	1 143	1 126	1 083	493	1 995	1 995
Labor force	1 378	645	942	15 608	1 072	1 129	1 181	210	1 421	1 528	971	969	899	414	1 143	1 143
Percent of total	92.2	83.7	93.4	99.3	91.5	86.8	91.5	67.1	80.1	88.9	84.8	86.1	87.7	84.0	88.3	88.3
Civilian labor force	1 022	503	723	108	545	671	688	202	1 244	1 254	851	811	783	341	894	894
Employed	947	464	630	108	532	666	652	202	1 191	1 219	844	800	783	341	844	844
Unemployed	55	39	73	-	13	5	36	-	53	35	3	23	28	12	49	49
Percent of civilian labor force	5.3	11.7	10.1	-	2.4	0.7	5.2	-	4.3	2.8	0.6	2.3	3.5	3.4	5.5	5.5
Not in labor force	116	111	67	105	100	172	201	103	352	190	174	157	136	79	150	150
Benefits of institution	41	-	-	-	-	-	-	-	42	-	-	-	-	-	-	-
Enrolled in school	41	45	31	48	30	107	102	22	142	95	42	36	34	9	39	39
Other under 65 years	36	38	13	37	34	49	39	31	108	70	77	57	52	25	57	57
Other 65 years and over	19	28	23	-	34	16	40	40	40	25	34	74	40	25	34	34
Male, 16 to 21 years old	319	132	184	9 214	133	172	889	49	884	947	317	188	176	69	160	160
Not high school graduates	37	6	10	2 839	30	17	83	-	12	6	40	23	14	6	85	85
Unemployed or not in labor force	10	-	6	-	4	11	26	-	12	6	20	11	11	-	8	8
Female, 16 years old and over	1 644	815	1 022	1 264	1 172	1 437	1 404	394	2 890	1 818	1 287	1 314	1 175	534	1 494	1 494
Labor force	491	417	399	236	427	575	520	81	637	655	564	557	583	283	623	623
Percent of total	42.0	48.8	39.0	17.3	36.4	40.0	36.5	27.4	30.0	36.2	44.0	48.3	44.9	30.9	42.9	42.9
Civilian labor force	491	405	399	236	427	567	514	81	627	637	564	565	572	277	641	641
Employed	465	363	343	206	405	552	452	69	592	570	540	530	502	260	615	615
Unemployed	26	42	56	30	22	15	62	12	35	67	24	35	70	17	26	26
Percent of civilian labor force	3.8	10.4	14.0	12.7	5.2	2.6	12.1	14.8	5.4	10.5	4.6	6.2	4.7	6.1	4.1	4.1
Not in labor force	953	438	624	1 128	746	862	904	215	1 463	1 155	721	628	648	273	853	853
Married women, husband present	1 190	598	754	1 261	953	980	1 054	219	1 399	1 374	890	812	766	315	1 040	1 040
In labor force	483	263	292	214	314	419	362	64	402	434	434	428	344	140	393	393
With own children under 6 years	424	191	261	710	454	354	439	39	325	512	272	271	171	99	348	348
In labor force	154	69	66	109	129	120	112	8	30	100	104	42	30	44	117	117
OCCUPATION																
Total employed, 16 years old and over	1 612	887	993	314	927	1 218	1 104	271	1 783	1 789	1 386	1 236	1 285	601	1 480	1 480
Professional, technical, and kindred workers	149	106	140	52	48	140	96	30	290	440	177	138	286	54	323	323
Health workers	19	11	23	14	-	28	29	5	76	84	14	10	34	34	63	63
Teachers, elementary and secondary schools	76	54	72	6	5	64	14	8	212	79	38	54	67	5	49	49
Managers and administrators, except farm	117	54	64	5	68	94	91	22	310	212	151	172	140	44	114	114
Salaried	91	45	39	-	61	83	32	12	217	144	129	105	105	28	96	96
Self-employed in retail trade	17	4	5	-	4	6	9	18	43	25	11	14	21	6	4	4
Sales workers	167	45	91	26	53	163	38	-	218	158	112	131	109	52	148	148
Retail trade	135	40	46	21	43	122	20	-	91	93	63	80	65	29	99	99
Clerical and kindred workers	293	247	162	48	143	287	194	19	303	247	242	242	279	102	311	311
Craftsmen, farmmen, and kindred workers	232	148	211	11	176	186	265	56	305	295	198	157	153	134	230	230
Construction craftsmen	74	39	62	-	61	70	125	32	36	111	66	45	67	27	102	102
Mechanics and repairmen	63	48	73	-	77	66	4	29	82	38	54	28	39	39	34	34
Operatives, except transport	150	64	63	70	132	121	72	15	25	89	128	130	62	64	85	85
Transport equipment operatives	46	16	49	16	54	30	85	-	8	41	75	46	37	14	33	33
Laborers, except farm	101	28	45	12	25	32	36	-	44	64	41	39	14	26	42	42
Farm workers	5	5	7	9	5	19	19	68	15	14	5	10	16	-	10	10
Service workers	298	85	141	49	196	155	195	41	145	133	238	144	175	107	167	167
Cleaning and food service workers	199	44	125	23	129	91	142	22	87	94	118	65	75	36	105	105
Protective service workers	5	-	11	-	21	11	12	-	10	5	22	-	34	-	8	8
Personal and health service workers	74	32	20	10	32	51	41	6	53	41	71	70	48	27	46	46
Private household workers	14	9	-	16	16	10	13	-	-	14	14	11	14	-	22	22
Female employed, 16 years old and over	463	263	343	386	485	533	453	49	893	876	546	536	582	246	615	615
Professional, technical, and kindred workers	87	42	65	48	13	72	63	19	151	138	60	49	96	38	155	155
Teachers, elementary and secondary schools	41	23	29	6	5	31	6	8	111	47	18	34	47	5	64	64
Managers and administrators, except farm	5	10	19	-	20	13	11	-	43	12	32	64	39	8	12	12
Sales workers	96	13	30	21	39	72	28	-	78	78	62	38	77	13	38	38
Clerical and kindred workers	186	185	122	48	122	209	158	4	235	212	224	177	182	92	234	234
Secretaries, stenographers, and typists	33	44	32	32	42	53	63	4	91	89	53	62	90	40	114	114
Operatives, including transport	82	37	34	24	65	78	48	9	16	12	61	72	25	25	44	44
Other blue-collar workers	15	14	6	-	10	24	10	-	13	22	4	23	14	12	11	11
Farm workers	-	-	-	5	5	-	3	7	-	4	5	5	16	-	5	5
Service workers, except private household	180	53	67	44	115	74	118	28	86	78	78	91	89	72	92	92
Private household workers	14	9	-	16	16	10	13	-	-	14	14	11	14	-	22	22
INDUSTRY																
Total employed, 16 years old and over	1 612	887	993	314	927	1 218	1 104	271	1 783	1 789	1 386	1 236	1 285	601	1 480	1 480
Construction	181	70	74	-	101	96	30	30	67	189	132	69	58	72	133	133
Manufacturing	187	109	116	57	152	140	81	20	159	264	254	260	121	106	219	219
Durable goods	140	94	110	19	122	92	69	14	120	198	170	180	91	85	173	173
Transportation	24	6	29	5	10	16	19	9	14	32	25	30	35	20	26	26
Communications, utilities, and sanitary services	73	37	75	22	35	51	45	6	62	75	43	87	64	14	95	95
Wholesale trade	14	-	23	-	5	12	-	-	43	51	39	41	48	-	40	40
Retail trade	398	199	175	65	270	314	194	26	379	339	251	277	246	125	176	176
Finance, insurance, and real estate	68	54	48	9	36	74	31	4	158	117	93	39	72	31	114	114
Business and repair services	41	12	32	22	44	40	60	9	94	51	50	48	28	49	55	55
Personal services	101	39	73	31	41	38	84	37	81	40	85	118	61	24	101	101
Health services	104	36	31	24	35	73	84	5	98	117	74	78	64	63	92	92
Educational services	208	124	148	6	31	134	82	25	311	260	151	141	181	28	173	173
Other professional and related services	28	21	17	38	12	8	42	12	62	92	76	19	91	28	68	68
Public administration	158	86	112	24	116	179	153	15	183	175	97	39	191	30	107	107
Other industries	27	14	39	9	29	24	30	73	30	45	15	14	23	9	39	39
CLASS OF WORKER																
Total employed, 16 years old and over	1 612	887	993	314	927	1 218	1 104	271	1 783	1 789	1 386	1 236	1 285	601	1 480	1 480
Private wage and salary workers	1 182	516	688	203	726	839	688	135	1 085	1 212	870	819	450	1 049	1 049	1 049
Government workers	351	248	247	74	184	337	326	38	476	425	307	232	394	95	316	316
Local government workers	125	92	105	6	48	99	138	-	221	201	92	136	180	46	129	129
Self-employed workers	79	43	55	37	17	42	77	91	11	147	99	86	67	47	75	75
Unpaid family workers	-	-	9	-	-	-	11	7	-	5	-	32	5	9	-	-

TABLE I-3

ACTIVE-DUTY MILITARY IN COLORADO SPRINGS RISK AREA
(Partial Sheet No. 1)

TRACT NO.	(1) TOTAL POP	(2) GROUP QUARTERS	(3) ACTIVE MILITARY								
1	5941	226	177								
2	6144	13	292								
3.01	3684	95	120								
3.02	2976	—	277								
4	3117	—	88								
5	2660	12	82								
6	4550	—	203								
7	4163	—	315								
8	3131	—	82								
9	2901	7	113								
10	2956	74	101								
11.01	1500	5	67								
11.02	4445	—	249								
12	3876	51	136								
13.01	3154	167	157								
13.02	2315	30	41								
14	4157	15	219								
15	3781	82	167								
16	3927	1233	273								
17	1791	9	183								
18	2626	191	285								
19	3817	49	256								
20	7554	9	588								
21.01	3870	301	334								
21.02	5981	—	556								
22	4014	27	309								
23	1593	164	131								
24	1949	9	105								
25	5258	68	310								
26	1940	7	131								
27	4380	517	317								
28	5282	70	451								
29	7494	27	691								
30	5146	73	499								
31	1329	—	21								
32	1037	93	20								
33.01	610	—	48								
33.02	1797	125	251								
34(C.S.)	46	—	—								
35	2854	18	209								
36	1424	6	203								
37.02	926	110	18								
39.02(64%)	4938	—	252								
40.02	11615	8	391								
40.03	4688	1081	1581								
40.04	8715	103	928								
41	5827	18	376								
42	2832	—	174								
43	3712	4	220								
44	19399	14455	15500								
45.01	4124	7	527								
45.02	5111	—	466								
45.03	4530	11	499								
RISK AREA	217,707	19,570	30,989 (14,953)								

TABLE I-4

SUPPORTING WORK SHEET FOR INSTITUTIONALIZED PERSONS

<u>Tract Number</u>	<u>Institutionalized Population</u>	<u>Key Institutions</u>
1	226	Benet Hill Academy
3.01	95	? ? ?
10	74	Penrose Hospital
12	51	? ? ?
13.01	167	People's Bible College
15	82	? ? ?
16-	1233	Colorado College
18	191	Memorial Hospital; Ent AFB
21.01	301	Union Printers Home
23	164	El Paso County Jail
25	68	? / ? ?
27	517	St. Francis Hosp; Colo. School for Deaf and Blind
28	70	? ? ?
30	73	? ? ?
32	93	Broadmoor?
33.02	125	Myron Stratton Home
37.02	110	Convent of St. Francis
40.03	1081	Peterson Field (Military Base)
40.04	103	? ? ?
44	14455	Fort Carson (Military Base)

As noted in Chapter 2 (pages 2-6 to 2-9), totals for split tracts should be entered first. Note, for example, in Table I-2 that in Tract 1, under "Totals for split tracts," there are 1421 males in the labor force, of which 1244 are civilian. The difference, 177, are the active duty military males. Similarly, there are 627 females in the labor force in Tract 1, all of whom are civilian. There are no female military in Tract 1. But note that there are 18 female military in Tract 2, so both male and female labor forces must be checked in each tract. Where only part of a tract is in the risk area, the military personnel should be proportioned as the risk area population is to the total tract population. Table I-3 shows the results for the Colorado Springs risk area. Note that Tract 39.02 shows only 64% of the military in the tract since it is only partially in the risk area.

4. The planning team should now analyze the data on Sheet No. 1, with the aid of the supporting work sheet on key institutions (Table I-4) to determine if any of the census tracts contain military installations with substantial numbers for personnel lodged in barracks. Tracts having known military bases within them should be reviewed as well as tracts in which a substantial proportion of the tract population is active duty military. Consider, for example, the data in table I-3. One obvious candidate is tract 44 where 15,500 of the 19,399 residents are active duty military personnel. Moreover, there are 14,455 persons in group quarters. These can safely be assumed to be troops in barracks even if it were not already known that Tract 44 was the Army base, Fort Carson. Since later calculations will require the separation of military in households from those in barracks, one subtracts the 14,455 in group quarters from the 15,500 active duty military and enters the difference, 1,045, in parentheses as shown in Table I-3. These, then, are the military personnel residing in households in Tract 44.

Similarly, about one-third of the population of Tract 40.03 are active duty military personnel and most of these are or appear to be in group quarters. (This is the military installation at Peterson Field.) The 500 military not in group quarters are also noted in parentheses in Column (3) for this tract. As one final possibility, Table I-4 notes that Tract 18 contains Ent Air Force Base. But the active duty military personnel in this tract comprise only 10 percent of the population of the tract, which is less than the average for the risk area as a whole. Moreover, the tract also contains a large civilian hospital that can account for most, if not all, of the persons in group quarters. One would judge that there are few, if any, military personnel in barracks in Tract 18. All of the military in the tract are assumed to be in households.

A convenient source of information and confirmation of the foregoing analysis by the planning team is the State Adjutant General's Office. As part of his responsibility for planning for military support to civil authorities under nuclear attack conditions, this office will be familiar with the basic characteristics of Army, Navy, Marine, and Air Force installations and units throughout the State. A Military Support Planning Officer (MSPO) may be attached to his staff who can be helpful not only at this stage of analysis but also in assessing alternative

relocation options for military dependents at a later stage.

To summarize the military personnel analysis for the Colorado Springs example, there are found to be 30,489 military in the risk area, (14 percent of the risk area population). Over half of the active duty military personnel reside in barracks in two census tracts. Deducting these from the total military leaves 14,953 military personnel living in households in the risk area. This number shows in parentheses at the bottom of Column (3) (see table I-3).